JOURNAL BPA OF THE

Biological Photographic Association

Dedicated to the Science, Techniques and Applications Pertaining to the Photography of All Things Which Live or Which Have Lived

QUARTERLY OF THE BIOLOGICAL PHOTOGRAPHIC ASSOCIATION, INC.

Volume 26, Number 4 November 1958

JOURNAL *of the* BIOLOGICAL PHOTOGRAPHIC ASSOCIATION

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Published at 733 North Van Buren Street, Milwaukee 2, Wisconsin. Editorial office: Box 1668 Grand Central P.O., New York 17, N.Y. Entered at the Post Office, Milwaukee, Wisconsin, under the act of March 3, 1879. Subscription price $9.00 per volume; foreign $9.50. Single copies $2.25 in the U.S.A.; foreign $2.40 in U.S.A. funds.

Journal of the Biological Photographic Association Vol. 26, No. 4 November, 1958

A Critical Appraisal of Photomicrographic Illustration

STANLEY J. McCOMB, F.B.P.A.

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Mayo Clinic, Rochester, Minnesota

BIOLOGIC illustration has made measurable progress in the last 25 years, both in technical excellence and in quantity. We, as members, may be justifiably proud of the part that the Biological Photographic Association has played in this advance. Recognition of this progress may be what led to the statement, which I attribute in a paraphrased form to past-president H. Lou Gibson, that further advances in biologic illustration could well be directed toward improved use; this thesis was admirably advanced in his paper "Photography In Action," given at the BPA Symposium in Washington in 1957. Agreement with this statement and also a growing concern that many reproductions in a certain segment of biologic illustration are unsatisfactory in their illustrative contribution have led to this critical look at photomicrographic illustration.

Discussion with several pathologists as well as photographers lent confirmation to this opinion, with acknowledgment by some that many illustrations in this category do indeed fail in their purpose. This purpose should be to aid in depiction and to clarify and augment the printed word. A synonym of "to illustrate" is "to adorn"; unfortunately, many reproductions of photomicrographs adorn and do not illustrate. Random perusal of current journals will uncover examples similar to those in figure 1; in *a*, a legend calls attention to "dark-staining nuclei" in a case of chronic cystic mastitis; *b* is an example of poor photographic technic, as is *c*; *d* purports to show a cylindric cell adenocarcinoma of the trachea; *e* is a lesion in lymphatic lymphoma, showing the absence of reticulum cells, although the absence of detail nullifies its value; the vague mass in *f* is a tubercle, showing the epithelioid cellular reaction. These examples are original illustrations and not reproductions from a reproduction. It should not be inferred that these examples represent a typical cross section of photomicrographic illustration. However, deficiencies are being considered, and illustrations of this quality occur too frequently.

Many reasons exist for these inadequacies. They may be found in what I choose to call (1) the mechanical area, having to do with engraving and printing, (2) the photographic area and (3) an area involving factors that might be called psychologic.

Mechanical Area

It is reasonable to state that present technics of engraving make possible excellent reproductions when they are made from original prints of high quality and that, by and large, engravers do satisfactory work. Furthermore, the rap-

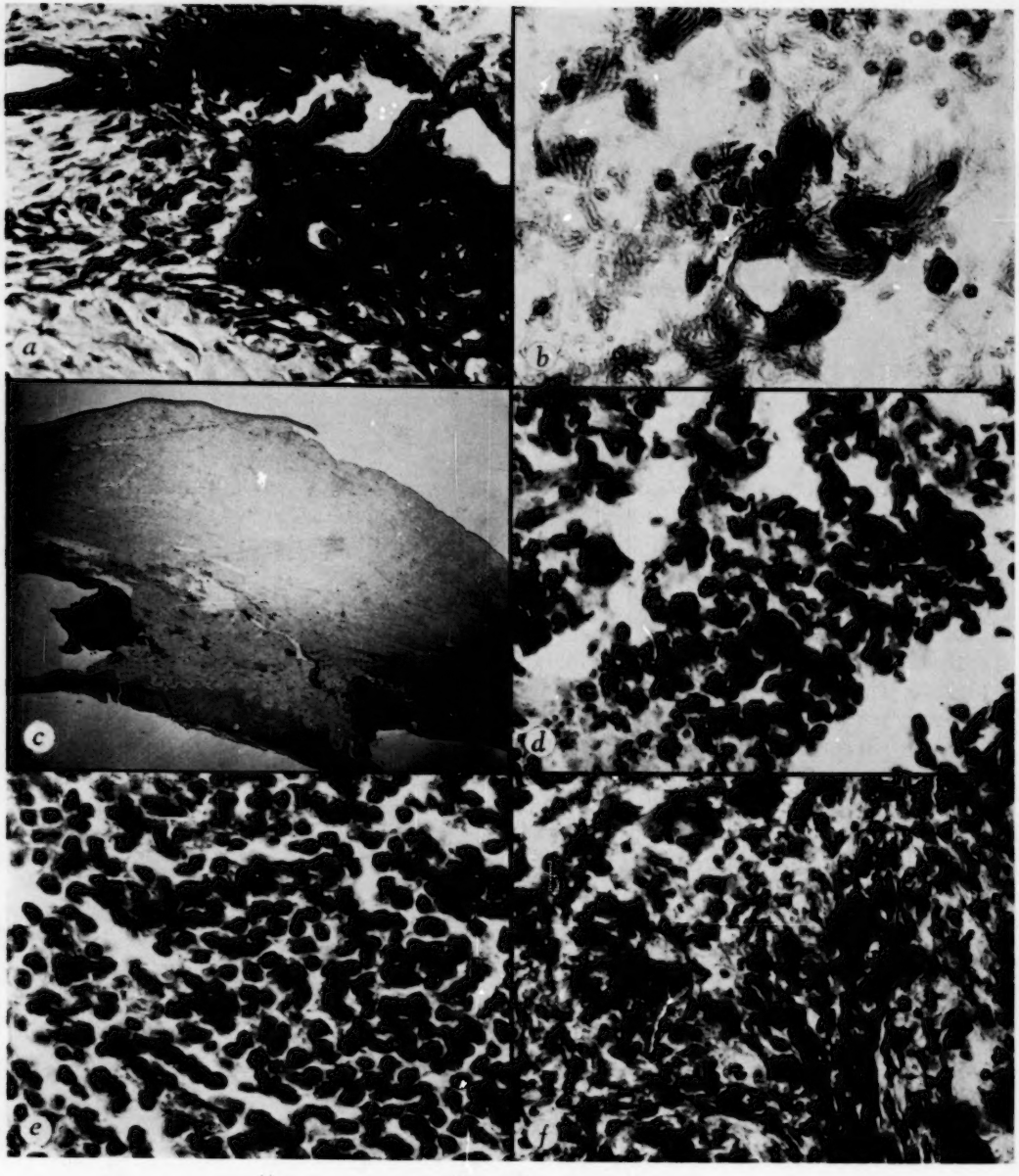

Figure 1.

port existing among editors, printers and engravers properly relates the halftone screen and the surface of the paper for optimal results. Thus, it is well known that a halftone of 60 to 65 lines per inch is suited to and prints best on a relatively coarse paper such as newsprint; as the number of lines per inch in a halftone increases, smoother coated papers are required, permitting the retention of extremely fine detail in a reproduction. Illustrations in many medical journals are printed from halftones of 120 to 150 lines and are quite satisfactory.

The quality of an illustration may be affected by the depth of printing. If halftone plates are overinked or if other technical factors are amiss, a dark reproduction with blocked-up detail results; conversely, insufficient inking produces a weak, washed-out effect. These are examples of purely mechanical failures that, if not actually damaging to illustrative quality, are always detrimental to the eye-arresting capacity of an illustration. Furthermore, they are usually beyond the control of the photographer.

Photographic Area

In considering broadly the photographic factors affecting the quality of illustrations, I am assuming knowledge of the technics of microscopy and the importance of the proper use of all optical elements, proper illumination and focus, and the avoidance of introduced aberrations, such as halo and diffraction effects. Just as important is awareness of the limitations of the equipment used. There usually is an optimal range in both mechanics and optics beyond which it is not practical to work without sacrifice of quality. Lack of precision in technic is frequently the reason for such illustrations as those in figure 2, showing (*a*) an aberration effect and (*b*) lack of sharp focus.

A prime factor in the production of a successful illustration concerns motivation. Why is a photograph desired in the first place? It is ordinarily because use of a picture is a succinct method by which to convey information or to depict features that would be extremely wordy in description. Furthermore, it should fulfill a specific *need*. In addition to this specific need, the purpose of the particular photograph, as it relates to the text, must be clear in the mind of the author, who might ask himself the following questions: What is the purpose of the picture? What is to be depicted? Will it have illustrative value?

Having established validity for the illustration, the question remains as to how it can best be treated photographically. Is a general-survey, low-power view for orientation required or is it really detail as revealed by a higher magnification that needs to be shown? All too frequently an author resorts to the unsatisfactory expedient of attempting to show both area and detail in one picture, which results in a compromise that does justice to neither. If it appears that both a low-power view for orientation and a high-power view for detail are necessary, a better illustration results from the use of two photographs.

When a definite limitation must be placed on the total number of illustrations, it is often possible to combine the salient portions of a high-power and a low-power view in the area normally accorded a single illustration by careful selection of the significant portions of the respective fields. The information conveyed in figure 3*a* and *b* can be presented just as effectively in half the space (fig. 3*c* and *d*), with no loss in detail or magnification. Careful utiliza-

tion of the available picture area is always beneficial. The low-power view in figure 4*a* shows two types of cellular structure, perhaps adequately, yet if the rectangular area is enlarged to fill the same total space (fig. 4*b*), the information is conveyed more clearly.

In this photographic area, the choice of negative emulsion, filters, exposure and development exerts an important effect on the final result. I occasionally suspect that some of us are guilty of "one worldness" in our adherence to one type of emulsion or one kind of filter pack when a departure from one or both actually would be beneficial. For example, figure 5*a* shows the effect of routine "B and G" filtering of an average section stained with hematoxylin and eosin and photographed on an orthochromatic emulsion, coupled with moderate underexposure, as can and does happen; figure 5*b* shows the benefit of full exposure, other factors remaining the same; figure 5*c* demonstrates the use of a G filter in conjunction with a panchromatic emulsion. Note the increasing detail possible by the use of a better-suited film and filter.

Histologic technics also have an important bearing on the quality of illustration. At times, faulty histologic technics make it impossible to obtain a satisfactory illustration. Folds and tears in tissue, marks from the microtome, and other artifacts always are distracting in an illustration. Some necessary histologic technics, such as use of frozen sections, make photography difficult. In exceptional cases, an entirely new preparation may be required, or it may be necessary to restain an old one for better rendition.

The choice of filters, emulsion and exposure depends on the thickness of the

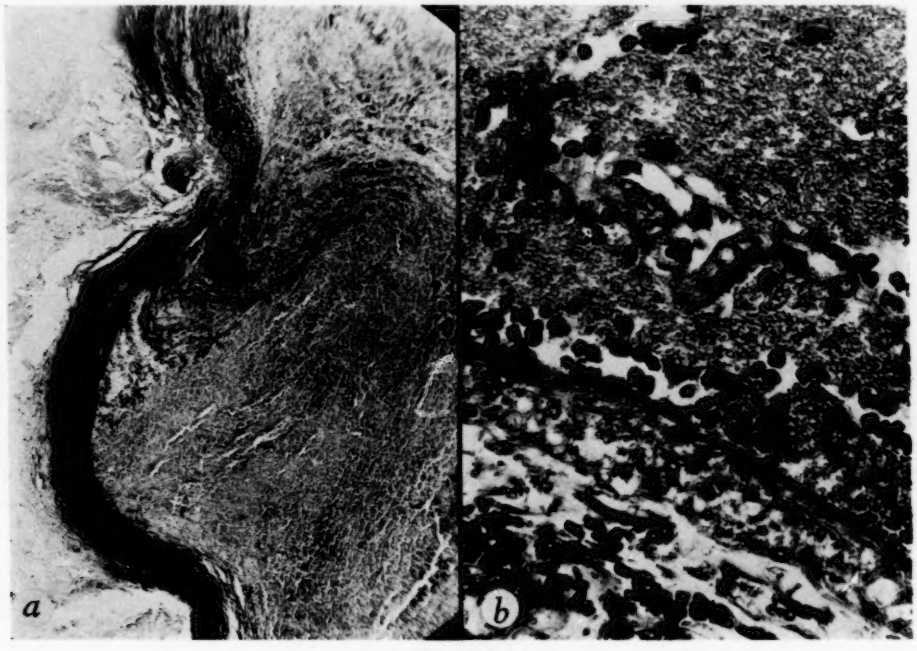

Figure 2.

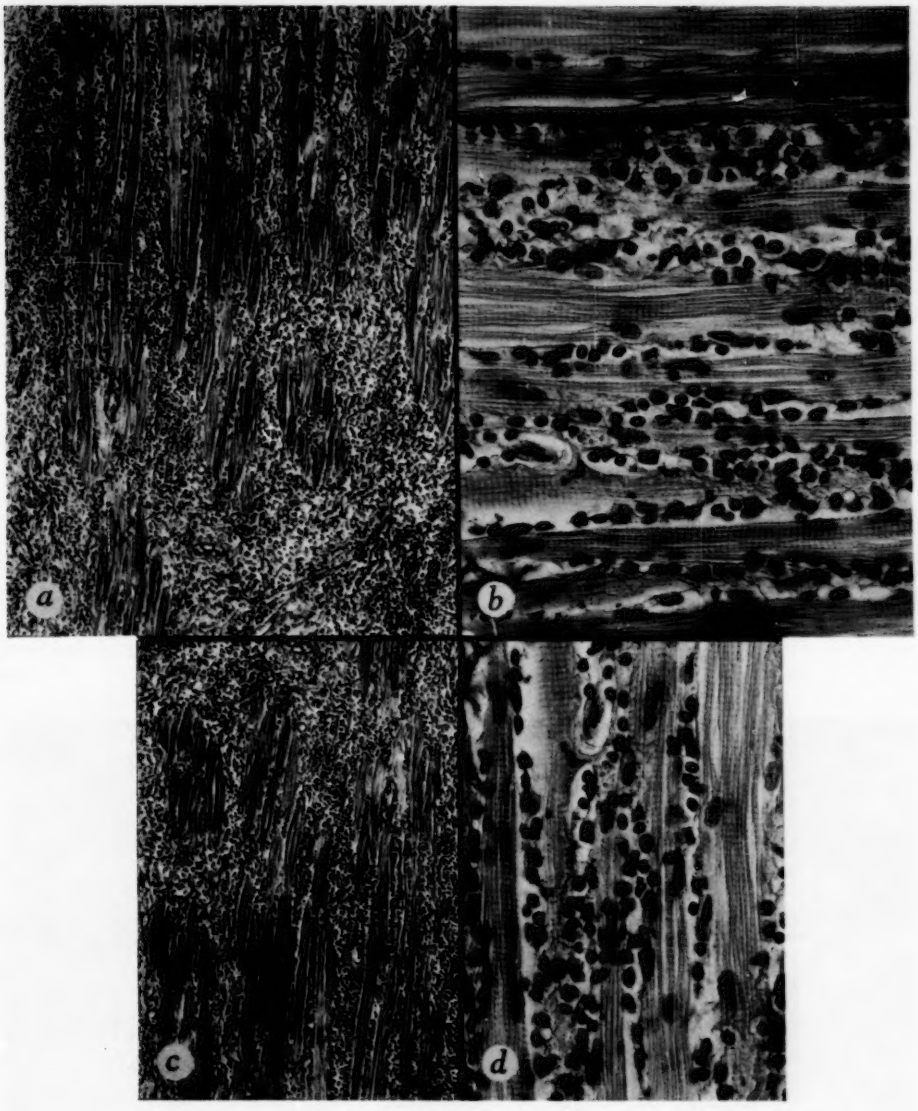

Figure 3.

tissue, the density of stain and the structure and type of tissue. The degree of magnification required frequently determines the filter or filters to be used. For example, a low-power magnification of 25 to 50 diameters showing mainly contrasts in areas usually requires contrast filtering produced by a narrow wave band for best results, while a 500-diameter magnification of the same area, in which detail is paramount, will benefit by use of less contrasty filtering or an

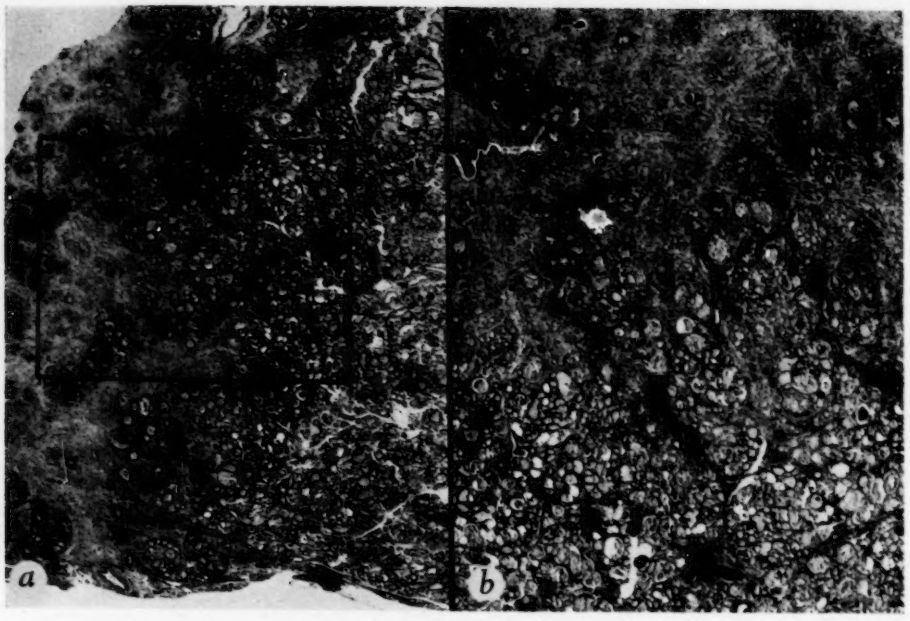

Figure 4.

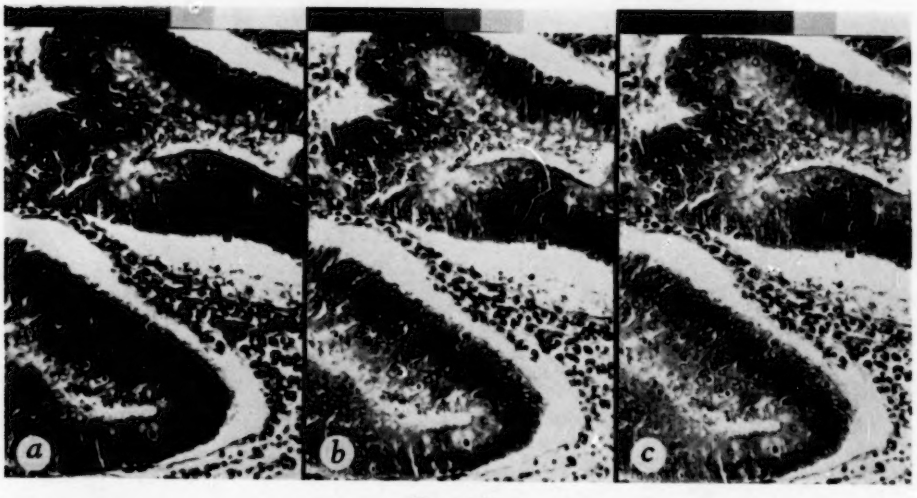

Figure 5.

emulsion of greater scale or possibly both. The low-power view in figure 6*a* was photographed on an orthochromatic emulsion with the "B and G" filters, whereas the high-power view (fig. 6*b*) was photographed on an orthochromatic film with a K 3 filter, and figure 6*c* shows the increasing detail possible by the use of a panchromatic emulsion with the latter filter.

While much of this discussion has centered around the need for reducing contrast in photomicrographs, need occasionally exists for increasing it, as demonstrated in figure 7*a*, which was photographed on the orthochromatic film ordinarily used. Figure 7*b* shows the improved result obtained by use of a process type of emulsion. A reasonable illustration could be made from the first print by use of an opaque medium on the negative to produce a clear background, but the use of a more suitable film obviates this extra effort.

It is, of course, possible to expand further the scale of an emulsion through moderate overexposure and compensatory underdevelopment. Thus, if the ratio between the maximal and minimal brightness of the field is 20:1, then the opacity of the negative representing these respective portions of the original may be made to have a ratio of more than 20:1 through manipulation of the negative. This is demonstrated in figure 8, in which *a* is a print that received normal exposure and development, while *b* is a print from a negative that received approximately 50 per cent more exposure and 30 per cent less development. From a practical standpoint, however, only those tones or gradations of a negative that can be reproduced in a printing medium are of value. In this connection, it appears that some rather well-established precepts useful for judging the excellence of negatives in ordinary photographic practice may not be strictly applicable in photomicrography. There is a definite limitation of color, as well as of differences in brightness, and the fine detail is apparently more tenuous. All these factors necessitate the greatest accuracy in all microscopic and photographic technics.

Little need exists to dwell on photo-

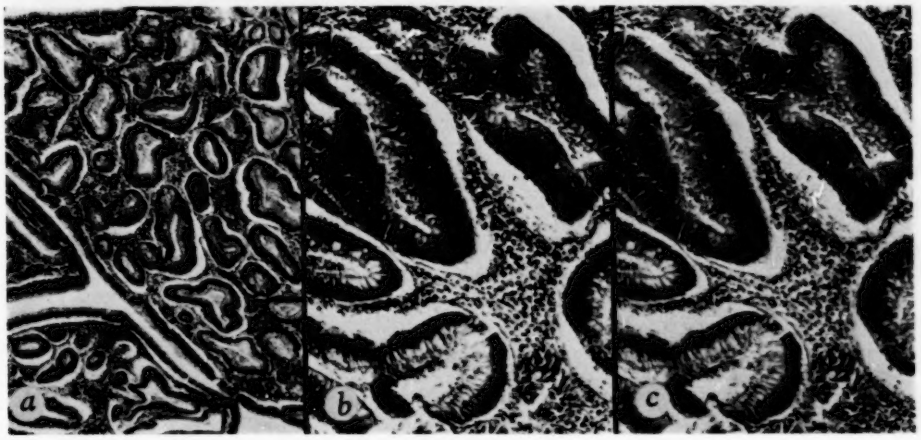

Figure 6.

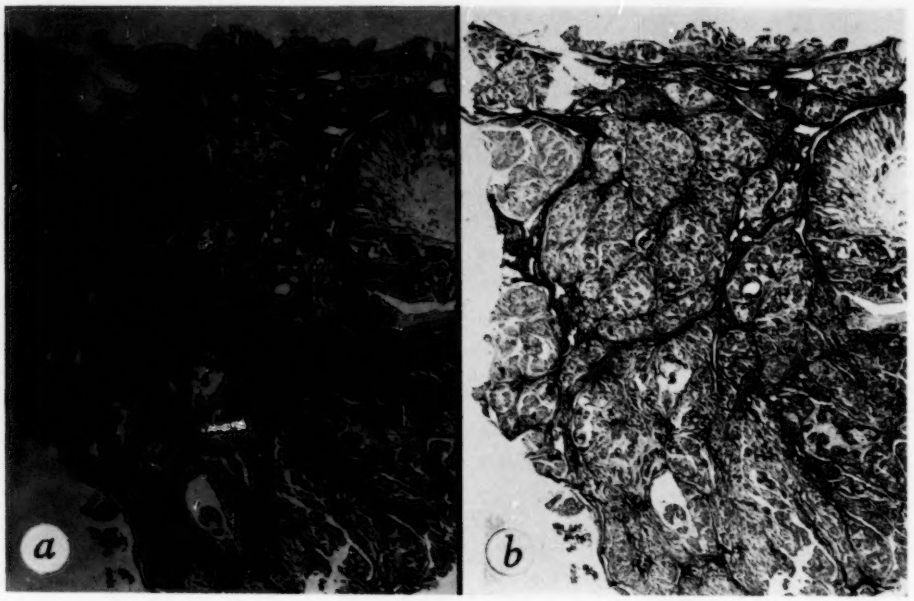

Figure 7.

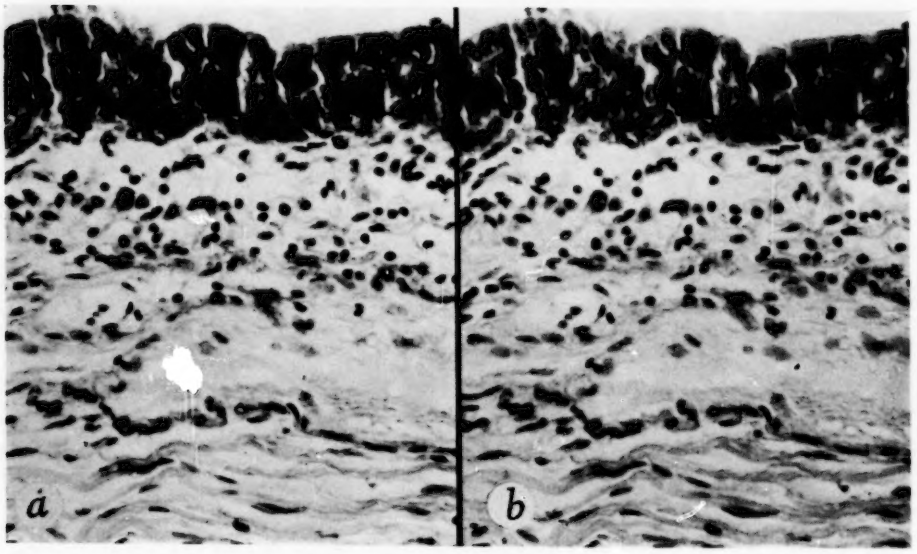

Figure 8.

graphic printing technics. The control of contrast and tone that is possible through judicious use of various grades of printing papers certainly aids in achieving an almost facsimile reproduction, limited only by the acknowledged inability of printing paper to reproduce as full a range of tones as is contained in the negative. Too much emphasis cannot be placed on the fact that a technically good print can be made only from a technically good negative.

When the contrast range of a negative is still considered excessive despite all efforts, then shading or dodging technics may be employed as a corrective. When detail to be retained is too small for the use of these technics, the application of a dye to the desired areas is helpful. The type of illustration seen in figure 9*a* may be remedied by the use of an opaque medium painted over the parts of the negative that are the white areas of the print (fig. 9*b*).

Psychologic Area

The third area predisposing to failure in achieving satisfactory illustration concerns factors that might be called psychologic, as already noted. One of these is the mental image resulting from the customary prephotographic scanning of the preparation by movement of the slide and selective focus, which result in a comprehensive, three-dimensional image that cannot be attained in a two-dimensional picture. The judgment and experience of the photographer are helpful in breaking down these elements for useful and practical illustrations.

Another factor in this category stems from the habit of, and familiarity with, viewing the prospective illustration as an image projected on a screen rather than as an illustration on a printed page. Detail magnified many times on the screen is likely to be most disappointing when viewed, much reduced, as a half-

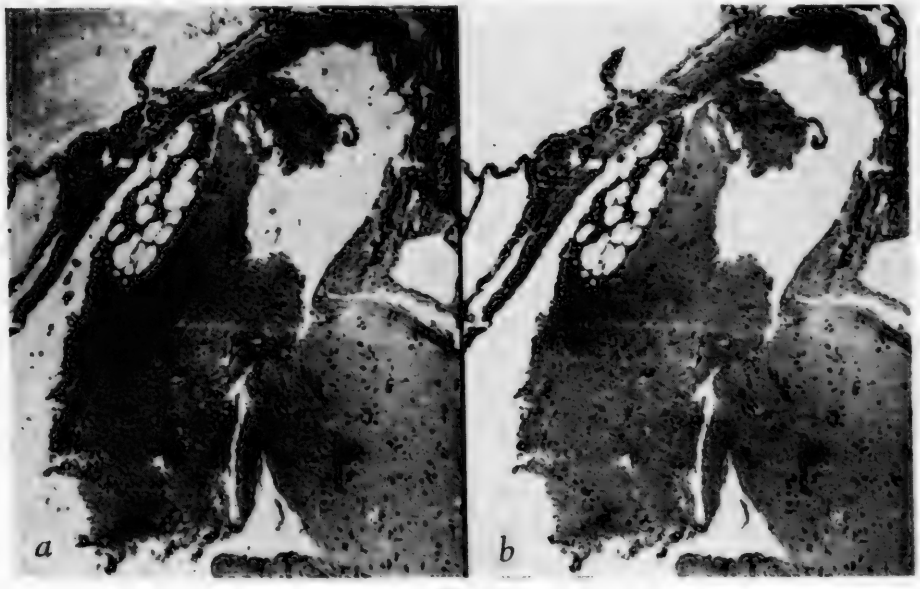

Figure 9.

tone reproduction. The ultimate use always should be considered, as well as the suitability of the proposed illustration for reproduction.

On the positive side, additional features, such as an arrow pointing to a significant portion or the boxing of an area, are particularly effective when used in connection with a higher magnification of the indicated area, as in figure 10. These are simple technics of increasing the effectiveness of an illustration that may be applied easily to the print.

Finally, although it may be said that little opportunity exists for exercise of the principles of composition in photomicrography, a bit of attention devoted to arrangement of structures many times will result in an illustration that does have more eye appeal, an idea supported by Osborn[1], who has stated, of an illustration: "To be functional it must challenge the attention of the reader—it must be attractive and interesting."

Summary

The preparation of a satisfactory illustration begins with thought to its need, its use, and the manner in which it will supplement the text. Of paramount importance is careful selection of the field at the optimal magnification for that particular field. Proper management of the tissue and the exercise of good photographic technics also are necessary to assure that the area selected best depicts what is intended to be conveyed to the reader. Attention has been directed to some causative factors in poor illustrative quality in photomicrography, and possible methods of improvement are offered.

Reference

1. Osborn, W. A. The Purpose of Textbook Illustrations. J. Biol. Photographic A. 24:133-143 (Aug.-Nov.) 1956.

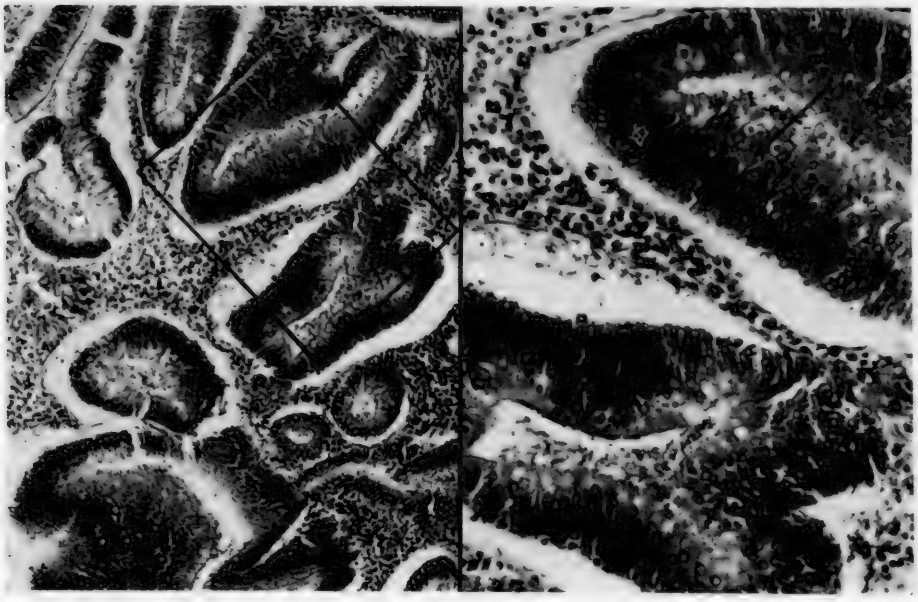

Figure 10.

Abstracts

77.056(99)

Photography at Sixty Below. N. K. Harrison. *Brit. J. Phot.*, **105:** 385, July 18, 1958. Photographic problems encountered during the Commonwealth Trans-Antarctica Expedition were described by George Lowe (a member of the Expedition and of the 1953 Mount Everest Expedition), at a meeting at the Royal Institution, June 18, 1958, in London, sponsored by the Royal Photographic Society. The photographic equipment employed consisted of two Rolleiflex cameras for black-and-white pictures, seven Bell and Howell motion-picture cameras, a Leica camera for color slides, two exposure meters (a Norwood and a Weston), and three Kodak films—Verichrome Pan, Kodak Tri-X, and Kodachrome. The oil was removed from the motion-picture cameras, and all metal parts of all cameras were covered with adhesive tape. An ultraviolet filter was used for color exposures and a yellow filter for black-and-white work. One motion-picture camera was warmed by a battery-powered heating pad. The simplest cameras were the most satisfactory; pictures were often obtained with box-type cameras when others failed. Temperatures ranged from zero to 60° F. below zero. M.B.K.

771.531.3 (Kodak Royal-X Pan)

World's Fastest Film: Kodak Royal-X Pan. M. G. Wilson, *Photo Digest (Australia)*, **1:** 48-52, No. 9, April, 1958. The author reports his experience with Kodak Royal-X Pan Film, stating that the exposure index can be raised, by extended development, to 8000 A.S.A. and that, while he made exposures between 1600 and 12,800 A.S.A., he obtained his best results at 4000 A.S.A. He reports that the film is too fast for making photographs in bright sunlight and must be loaded in very subdued light to avoid edge fog. Most exposure meters were found to be inadequate for use with this film, the only exception being the Weston Master III. Tables are included which give exposure suggestions for normal and extended development and development suggestions for exposures ranging from 1600 to 8000 A.S.A., using Kodak Developer DK-60a. M.B.K.

778.32 : 771.313.2 : 623.451.8

Craft and News Notes [Photographic Coverage of the Jupiter-C Launching]. J. Reidy. *U.S. Camera*, **21:** 10, 14, May, 1958. Cameramen covering the launching of the Jupiter-C rocket, at Cape Canaveral, Florida, were located 1¼ miles from the launching pad and used lenses from 300 to 2000 mm. in length. Roll-film cameras were either the 35-mm., 2¼- by 2¼-in., or 70-mm. size, and most of them had spring-wound or battery-operated, automatic film-transport devices. To prevent movement of the cameras with the long-focus lenses, large concrete blocks were suspended from the camera tripods. Discussion between the official photographers at the launching pad and the newspaper photographers resulted in the selection of an exposure setting of 1/250 sec. at *f*/5.6 for film having an exposure index of 400 A.S.A. G.H.

MEDICAL AND BIOLOGICAL ILLUSTRATION

CONTENTS

OCTOBER, 1958

Myxoedema . . . . . J. H. Briggs

Max Brodel, 1870-1941 . . . . . Sylvia Treadgold

The Illustration of Brain Sections for Reproduction . . . . . W. Hewitt

Silhouettes . . . . . C. E. Engel

A Method of Producing Models of Hollow Organs . . . . . J. A. E. Gleave

Flash Photomicrography of Living Organisms . . . . . B. A. Jarrett

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Journal of the Biological Photographic Association Vol. 26, No. 4 November, 1958

Negative Identification

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From the Department of Laboratories and Isaac Albert Research Institute of the Jewish Chronic Disease Hospital, Brooklyn 3, N. Y.

A PERMANENT method of negative identification, not requiring the photographer's attention, is often desirable or imperative when large numbers of photographs and similar photomicrographs are taken. This avoids the possibility of confusion during processing and handling.

Certain manufacturers of film holders advise the use of numbers printed on clear film tabs. These tabs are cemented on the inside of the film holder and the number is automatically contact printed on the negative at the time of exposure. This method has been tried and it has been found that the tabs either break or fall off. Also, since this mark is in the negative area the potential useable area is often reduced.

A method of permanent film holder and negative identification was devised in this laboratory which eliminates the disadvantages of the tab identification method. Since the holder and negative are clearly and permanently marked an accurate record of each exposure may be kept. The only special equipment necessary are two small files: one round and and triangular.

Technique

The bottom wood, or plastic, flap of the film holder is notched using the round and/or triangular files, depending upon the shape of the notches required. The triangular file is used to cut a V notch when one edge is used, and a "square" (⌴) notch when a flat side is used. The round file is used to cut a semicircular (◡) notch. The notches are cut 1/16 inch deep (Fig. 1). This does not impair the effectiveness of the flap as a retainer or light trap.

Figure 1. A standard film holder with code notches cut into the lower flap. This permanently identifies the holder and all the film passing through it. The inset is an enlargement of the flap showing the code.

The following identification code is used in this laboratory:

V = 1, when on the right side of the holder.

V = 5, when on the left side of the holder.

$\cup = 10$

$\cup\sqcup = 40$

$\sqcup = 50$

Discussion

The bottom flap of the film holder acts as a light trap and a retainer to keep the edge of the film flat when the dark slide is withdrawn prior to exposure. It also masks approximately 1/8 inch of the negative. The identification system described above makes use of this masked area by changing the original straight line masking action of the flap. The flap then acts as a template, automatically contact printing a notched code on the formerly unused negative area. There is no interference with the standard negative area (Fig. 2).

If the negative is contact printed without masking, the notching code infringes on the black border, giving a permanent record on the print (Fig. 3). If margins are used, or enlarged prints are made, it is only necessary to check the notching code on the negative, easily seen by safelight illumination, and mark the correct number on the back of the paper prior to exposure.

If further numbering is desired, such as a job number or date, this can be photographed onto the negative after exposure by any of the negative numbering machines which are commercially available (Fig. 3).

Figure 2. The negative produced after exposure of film in a notched holder. This is checked against records for identification.

Figure 3. Print from an unmasked coded negative. The Code number appears on the right as areas projecting into the black border. Arrow indicates the job number superimposed on the negative before development.

Summary

A permanent numbering method for the purpose of designating individual negatives is described. The simple technique employs a notching code cut from the inner frame border of the film holder.

Acknowledgement

The author wishes to thank Dr. S. M. Aronson for assistance in the preparation of the manuscript, and Mrs. T. Milder for the typing.

Journal of the Biological Photographic Association Vol. 26, No. 4 November, 1958

Dark Field Illuminator for Petri Dish Photography

JOHN N. SCHUTZ

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University of California, Berkeley

AN adjustable dark-field illuminator has been developed to examine and photograph Ouchterlony[1] gel-diffusion plates. Since the antigen-antibody precipitate patterns formed are diffuse and very nearly the same color as the agar, they must be illuminated obliquely from beneath the plates. A dark-field appearance is created by using two Circline* fluorescent tubes surrounding a blackened hollow cylinder. The height of each of the tubes and the cylinder is independently variable relative to the plate being examined. The lights are adjusted to give the best delineation of the line patterns in each plate. A record is made of the position of the lights, the cylinder, and the orientation of each plate so that the conditions may be duplicated for successive periodic examinations of the same plate throughout the experiment.

During the many visual examinations of each plate, routine progress photographs are made by swinging a preset camera over the illuminator and the plate. Generally, Contrast Process Pan* film is used. It is processed according to the manufacturer's recommendations. When necessary, filters are used to vary contrast and to minimize coloring of the agar by hemoglobin or other pigments in either serum or antigen preparations.

The illuminator is built of stainless steel to facilitate its decontamination after use with pathogenic microorganisms.

Although this illuminator was designed especially for examination of the Ouchterlony plates, it has been used successfully in the photography of tissue cultures and of other types of bacteriological materials.

[1] Ouchterlony, Orjan. 1940 Antigen antibody reactions in gels. Acto. Path. Microbiol. Scand. *26*: 507-515.

also

Crumpton, M. J. and Davies, D. A. L. 1956. An antigenic analysis of *Pasteurella pestis* by diffusion of antigens and antiboides in agar. Proc. Roy Soc. (London) B., *145*:109-134.

* Trade Name

This work was sponsored by the Office of Naval Research, U. S. Navy, under a contract between the Office of Naval Research and the Regents of the University of California.

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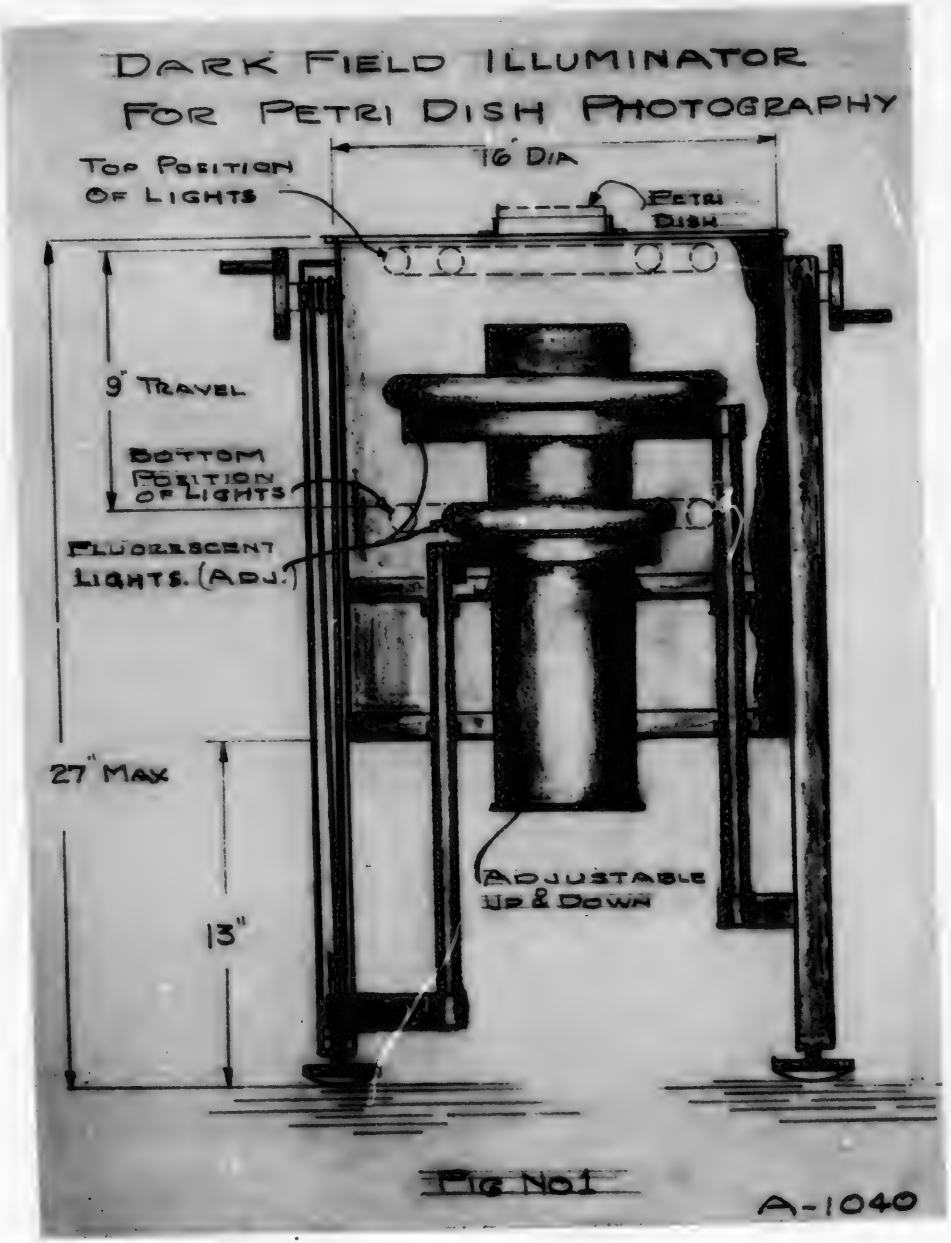
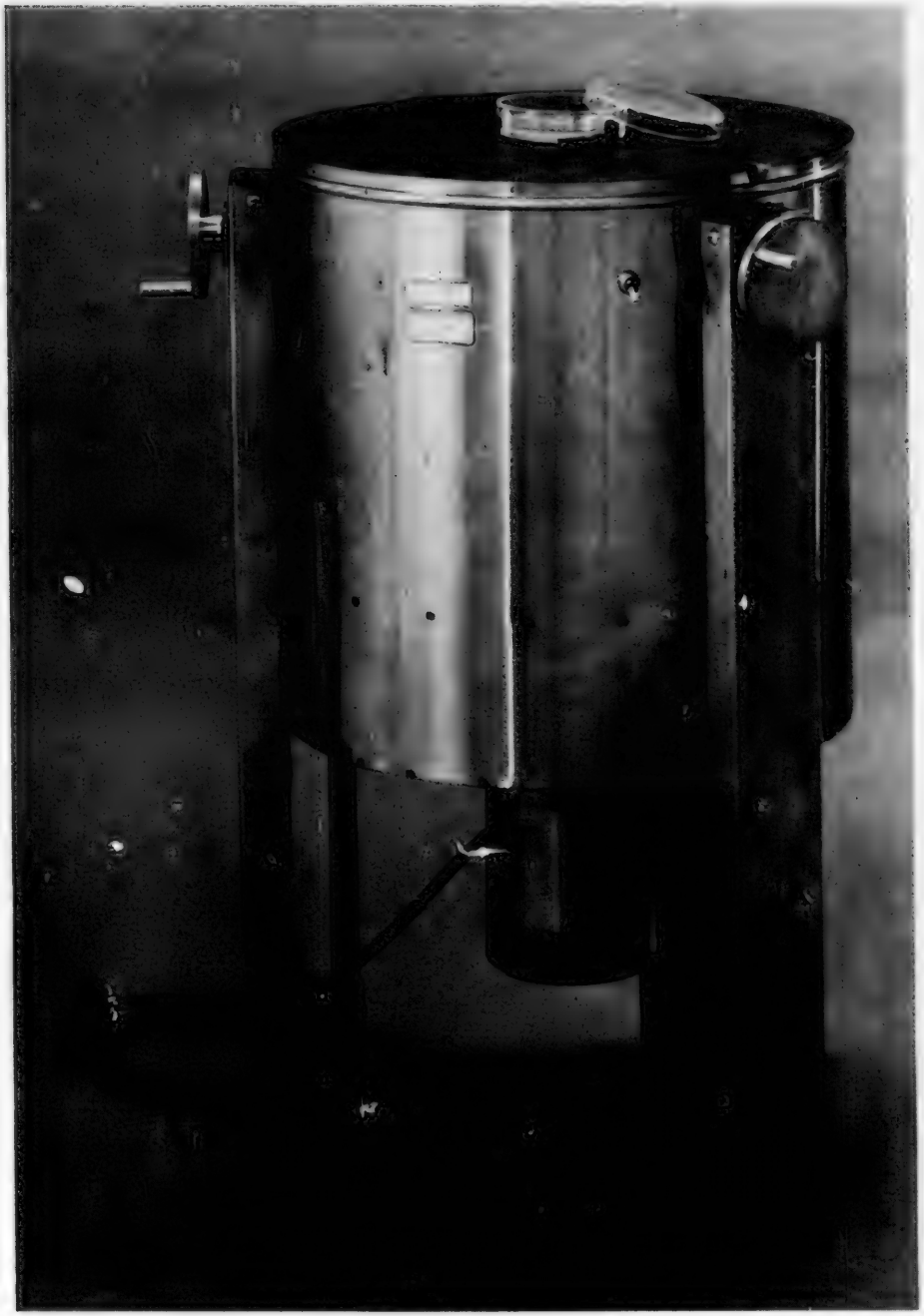
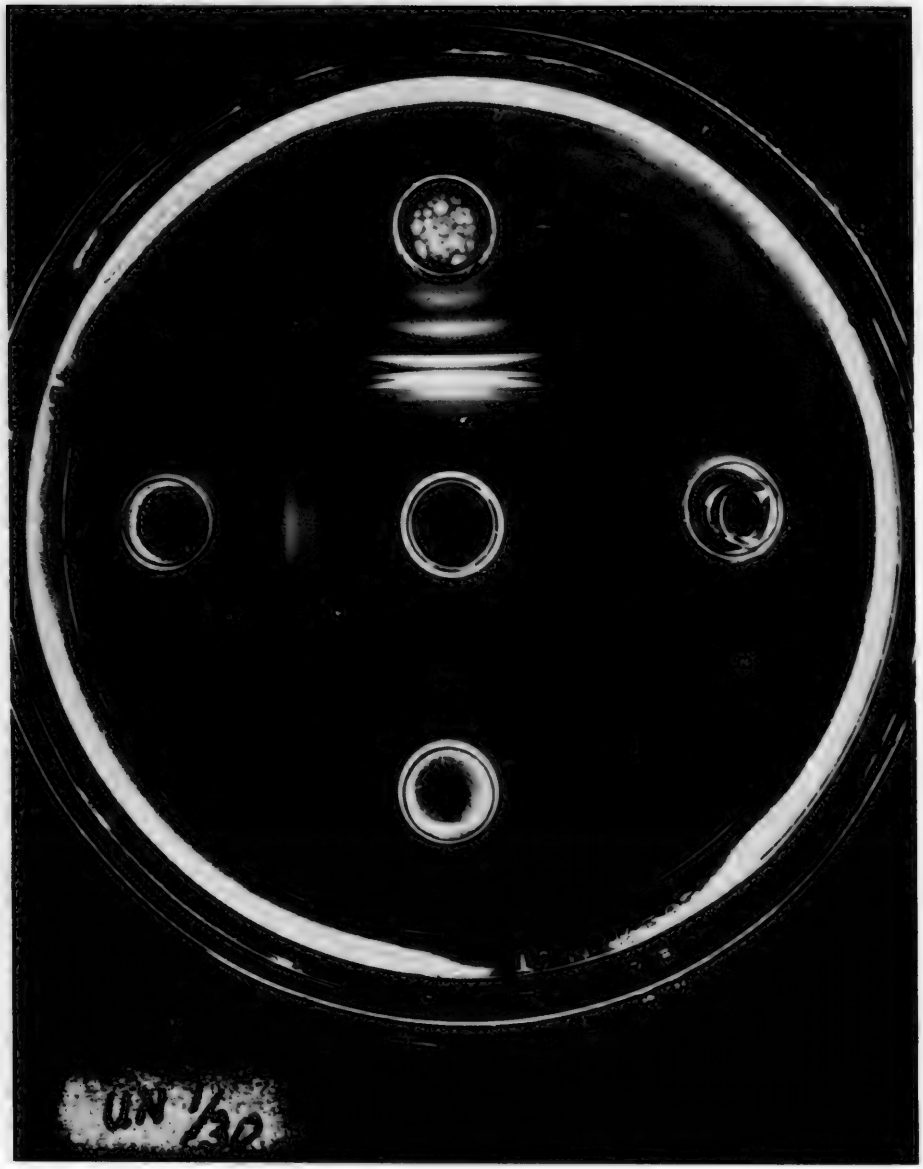
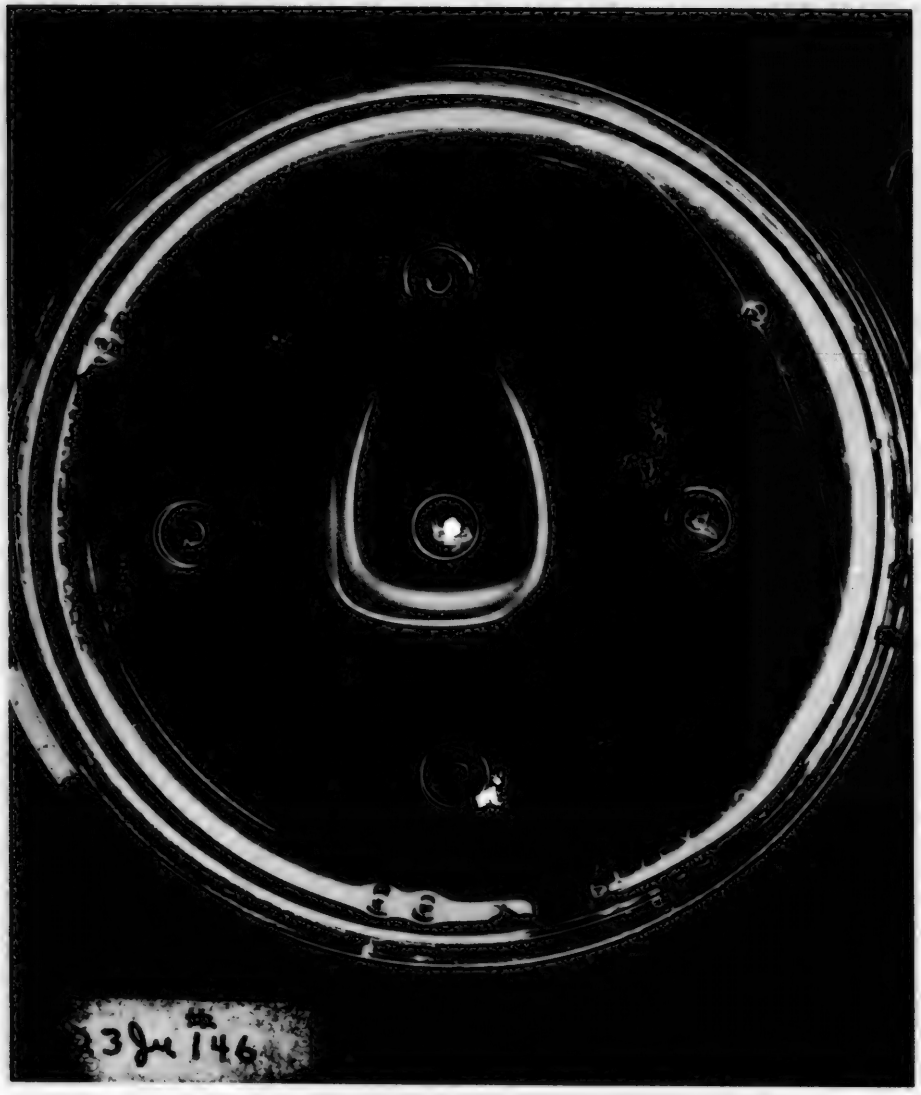

DARK FIELD ILLUMINATOR
FOR PETRI DISH PHOTOGRAPHY
TOP POSITION OF LIGHTS
16" DIA
PETRI DISH
9" TRAVEL
BOTTOM POSITION OF LIGHTS
FLUORESCENT LIGHTS. (ADJ.)
27" MAX
13"
ADJUSTABLE UP & DOWN
FIG NO 1
A-1040




UN/AD


3Jm 146

Journal of the Biological Photographic Association Vol. 26, No. 4 November, 1958

System of Filing for Medical Photography

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Introduction

FROM the earliest period of modern civilization, man has sought to communicate knowledge. Drawing, writing, and later, printing developed. Inevitably there grew the problem of providing a means of easy access to specific information within a reasonable length of time. Thus began the system which we know as "filing". This system, to be useful, must provide a method of co-relation within specific fields. Through the centuries, filing methods have developed and improved and now are able to meet the needs of many specialties.

Medical photography is a recent addition to medical technology, and the filing of medical photographic material has not become, as yet, uniformly systematized. Various hospitals employ various methods of filing, either centralized or decentralized, many of which are quite inadequate.

1) *Centralized*: Some hospitals file photographic material centrally, under doctors' names, some under lecture titles, some under the patients' names, and some in groups according to the disease entity. Most hospitals employ one or more systems of cross-filing.

2) *De-Centralized*: Some hospitals give their photographic material to the departments that are concerned, such as the departments of Pathology or Surgery. These departments then maintain their own photographic files. In other hospitals the material is given to the specific doctor for whom it was prepared.

At St. Michael's Hospital, Toronto, a new system has been developed, based partly on the above methods, and supplemented by a number of original ideas contributed by the staff of this and other departments. I believe that this system provides a most complete and efficient means of classifying medical photographic material. Under this system, all photographic material is coded, cross-indexed and filed in a central library. (Fig. 1 & 2) It is the purpose of this article to explain the system and to point out its merits.

Structure of System

The basic principles underlying the system are, first, the maintenance of a central library in the Photography Department; second, the use of the Standard Nomenclature of Diseases and Operations for the coding and filing of the material; third, cross-indexing under the doctors' names.

Patients' Alphabetical File

The main file of slides and negatives is kept in the Photography Department ar-

ranged in envelopes alphabetically, under the patient's name. On each envelope must be listed all pertinent information. For example:—the slide number, a description of the nature of the slide (i.e. surgical specimen, autopsy specimen, etc.), the size of slide, the diagnosis, the patient's chart number, age, date when photographed and the name of the attending doctor or doctors. (Fig. 3) In the case of pathological specimens, the pathology number is noted. X-rays and photomicrographs are dated, not when photographed, but when the original x-ray or photomicrograph was prepared. The x-ray plate number is also listed. These slides are coded according to the Standard Nomenclature of Diseases and Operations, and by referring to the S.N.D.O. Index it may immediately be ascertained just what material is available on any specific disease or operation.

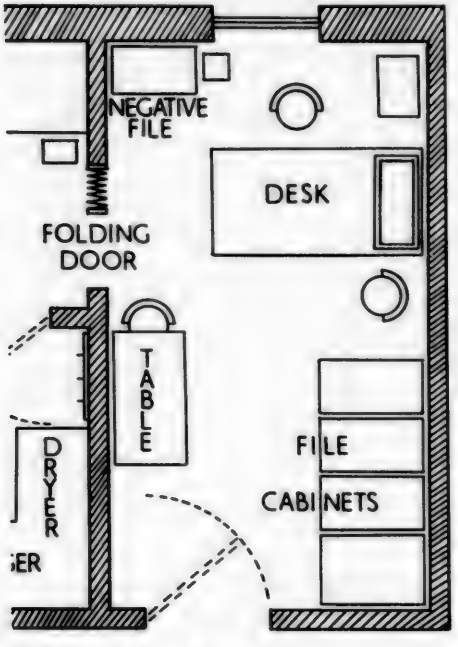


Figure 1.

Mechanics of the Files

After the slides are mounted and the white tab placed in the lower left corner, the patient's name is entered in the Slide Accession Book and the accession number (identification number) is assigned to the slide. There is, also, the sequence number, in instances where there is more than one slide. The slides are now placed in their envelopes which have been prepared with the necessary data. A card is typed for the Doctor's Index. (Fig. 4)

The transparencies should be kept in paper envelopes measuring $3\frac{1}{2}''$ x $4\frac{3}{4}''$ which will accommodate two 35 m/m slides or one $3\frac{1}{4}''$ x $4''$. The envelopes will fit into a $12\frac{1}{4}''$ wide filing cabinet—two envelopes side by side with a dividing space of $2''$. (Fig. 5) Paper slips with information regarding slides which have been borrowed are placed in the $2''$ space. Small markers are put in the file at the spots where envelopes have been removed. Information on these markers includes patient's name, slide number, number of slides in set and the date and the name of the borrower.

The slide itself should contain only the necessary information. This will include an identification number and sequence number in cases where there is more than one slide. If desired, a small printed tab giving the name of the institution may be affixed on the reverse side. (Fig. 6). The identification and sequence numbers are essential, for when a slide is out of its envelope it might become impossible to identify it. If slides are removed from their envelopes, the envelopes are not returned to the Patients' Alphabetical File until the slides are replaced. The empty envelopes are

Figure 2.

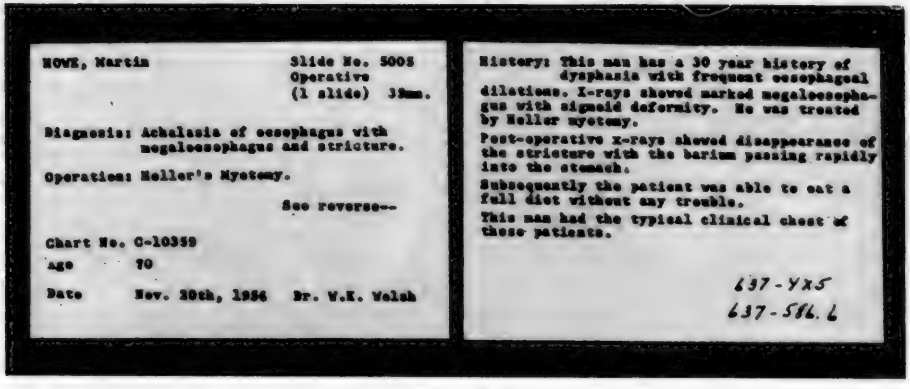

HOWE, Martin
Slide No. 5005
Operative
(1 slide) 35mm.
Diagnosis: Achalasia of oesophagus with megaloesophagus and stricture.
Operation: Heller's Myotomy.
See reverse--
Chart No. C-10359
Age 70
Date Nov. 20th, 1956 Dr. W.K. Walsh
History: This man has a 30 year history of dysphasia with frequent oesophageal dilations. X-rays showed marked megaloesophagus with sigmoid deformity. He was treated by Heller myotomy.
Post-operative x-rays showed disappearance of the stricture with the barium passing rapidly into the stomach.
Subsequently the patient was able to eat a full diet without any trouble.
This man had the typical clinical chest of these patients.
637-YX5
637-586.2

Figure 3.

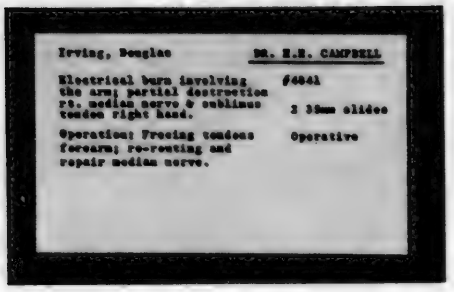

Irving, Douglas
DR. H.R. CAMPBELL
Electrical burn involving the arm; partial destruction rt. median nerve & sublimus tendon right hand.
#4641
2 35mm slides
Operation: Freeing tendons forearm; re-routing and repair median nerve.
Operative

Figure 4.

Figure 5.

Figure 6.

put in a wire basket kept for this purpose. Very often the doctor prefers to take the slides in their respective envelopes because they contain information to which he might refer.

The Standard Nomenclature of Diseases and Operations Index

We have used the S.N.D.O. as the basic index in our library for photographic material. (Fig. 18). The S.N.D.O. divides disease conditions into, first, the portion of the body concerned (topography) and, second, the cause of the disorder (etiology). There are eleven divisions in the former and thirteen in the latter, and each is assigned a symbol, as in the diagram. (Fig. 7). In assigning a number to each case in our library we follow the system of the S.N.D.O. exactly. A short description of the system, quoted from the S.N.O.D. is: *"These major groups are further divided in order to specify a definite organ or part of an organ. Thus, for example, the digestive system is designated by 6. The fourth organ listed in the system being stomach, the digits for the stomach are 64. The pylorus which according to arrangement is the fifth structure under stomach, therefore received the code number 645-. Thus if a lesion involves the whole alimentary tract, it will receive the topographic classification 600-; if the disease involves all the stomach, it will receive the number 640-, and if it can be positively identified as involving the pylorus, it receives the number 645-."

The etiologic classifications are similarly sub-divided.

The file is opened, either vertically or horizontally, with the eleven topo-

* S.N.D.O. Fourth Edition, Page X, Richard J. Plunkett, M.D., Editor, Adaline C. Hayden, R.R.L., Associate Editor.

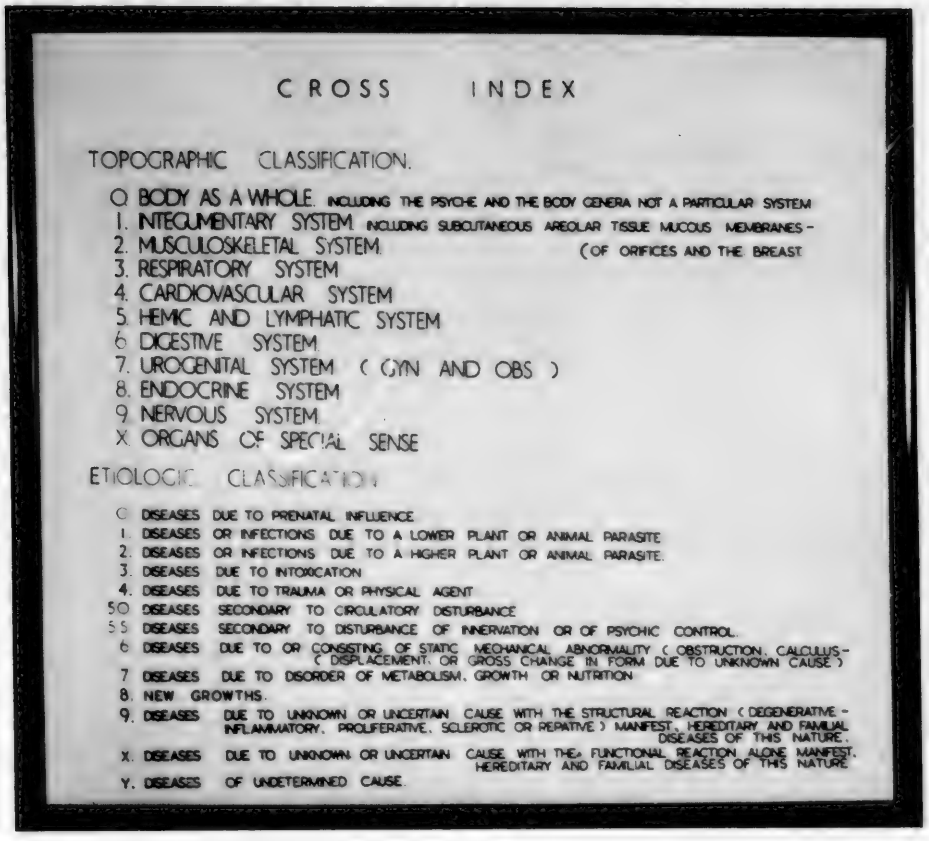

CROSS INDEX
TOPOGRAPHIC CLASSIFICATION.
0. BODY AS A WHOLE. INCLUDING THE PSYCHE AND THE BODY GENERA NOT A PARTICULAR SYSTEM
1. INTEGUMENTARY SYSTEM. INCLUDING SUBCUTANEOUS AREOLAR TISSUE MUCOUS MEMBRANES - (OF ORIFICES AND THE BREAST
2. MUSCULOSKELETAL SYSTEM.
3. RESPIRATORY SYSTEM
4. CARDIOVASCULAR SYSTEM
5. HEMIC AND LYMPHATIC SYSTEM
6. DIGESTIVE SYSTEM
7. UROGENITAL SYSTEM (GYN AND OBS)
8. ENDOCRINE SYSTEM
9. NERVOUS SYSTEM.
X. ORGANS OF SPECIAL SENSE
ETIOLOGIC CLASSIFICATION
0. DISEASES DUE TO PRENATAL INFLUENCE
1. DISEASES OR INFECTIONS DUE TO A LOWER PLANT OR ANIMAL PARASITE
2. DISEASES OR INFECTIONS DUE TO A HIGHER PLANT OR ANIMAL PARASITE.
3. DISEASES DUE TO INTOXICATION
4. DISEASES DUE TO TRAUMA OR PHYSICAL AGENT
5O DISEASES SECONDARY TO CIRCULATORY DISTURBANCE
5S DISEASES SECONDARY TO DISTURBANCE OF INNERVATION OR OF PSYCHIC CONTROL.
6. DISEASES DUE TO OR CONSISTING OF STATIC MECHANICAL ABNORMALITY (OBSTRUCTION, CALCULUS - (DISPLACEMENT, OR GROSS CHANGE IN FORM DUE TO UNKNOWN CAUSE)
7. DISEASES DUE TO DISORDER OF METABOLISM, GROWTH OR NUTRITION
8. NEW GROWTHS.
9. DISEASES DUE TO UNKNOWN OR UNCERTAIN CAUSE WITH THE STRUCTURAL REACTION (DEGENERATIVE - INFLAMMATORY, PROLIFERATIVE, SCLEROTIC OR REPAITVE) MANIFEST, HEREDITARY AND FAMILIAL DISEASES OF THIS NATURE.
X. DISEASES DUE TO UNKNOWN OR UNCERTAIN CAUSE WITH THE FUNCTIONAL REACTION ALONE MANIFEST. HEREDITARY AND FAMILIAL DISEASES OF THIS NATURE
Y. DISEASES OF UNDETERMINED CAUSE.

Figure 7.

graphical headings sub-divided according to the thirteen etiologies.

For the indication of symptoms and syndromes there are code numbers described as "Supplementary Terms". These terms are filed at the back of each topographical section (i.e. under System (—"The Nervous System"—Hemiplegia).

Coding Procedure

Days are assigned for coding, every one or two months, depending upon the number of new slides. The envelopes of the most recent additions to the files and any other material not previously coded, are drawn from the files with the use of the Slide Accession Book, and the diagnoses listed on the envelopes are coded. The code cards are drawn from the S.N.D.O. Index and on the card referring to the correct topographical-etiological classification is listed the patient's name, slide number and a brief description of the slide. (Fig. 17). Information should be checked and completed with records of the Medical Record chart room, checking diagnoses,

age, chart number and attending doctor. (Fig. 20). The admission slip is stamped to show that the photographs of this patient are available in the Photographic Library. In cases where the patient may be identified from the photographs, a signed and witnessed permission must be obtained and affixed to the chart giving the hospital staff free use of the pictures for teaching or for publication. If there are previous slides of the patient, the same identification number is used. Disease entities and operative procedures not previously encountered, will necessitate opening up new code cards. Disease cards are white; operative cards are blue. Each case is checked off in the Slide Accession Book as having been coded and the envelopes and index cards are re-filed.

Prints and Art Work

Photographic prints and art work, mounted or un-mounted, are generally larger than 3¼" x 4". They could be 5" x 7", 8" x 10", 11" x 14", etc., and must be kept in a separate filing cabinet with a cross-reference in the Patients' File. Occasionally, prints are attached to the chart. In either case, an envelope, usually containing the negative, is completed with all necessary data and placed in the Patients' File. The location of the print is noted in red, on the envelope.

Negatives

Negatives pertaining to matters other than those of a medical nature (such as hospital activities) should be kept in a separate file. (Fig. 1). The filing of these will depend upon the matters to which they pertain.

Personnel

In a small hospital (up to 500 beds) one person should be able to handle both the photography and the filing of slides with the exception of the coding. Coding requires special training and should be done by a Record Librarian, at one or two month intervals, according to arrangements made with the head of the Record Department. The photographer, after a short time, should become sufficiently familiar with the Standard Nomenclature Index that he can locate material with ease.

A larger hospital may employ two or more persons for their Photographic Department. The work should be divided so that one person can concentrate on the photography while the other on the files. (Fig. 21). In a hospital where a large volume of work is carried out it will be necessary to employ a qualified secretary-assistant who will make filing and coding a full-time occupation. (Fig. 8).

Doctors' Index

Index Arrangement and Purpose

Under the individual doctors' names, (Fig. 9/1), are kept index cards, filed alphabetically, bearing the names of that doctor's patients who have been photographed. (Fig. 10). These cards give also

Figure 8.

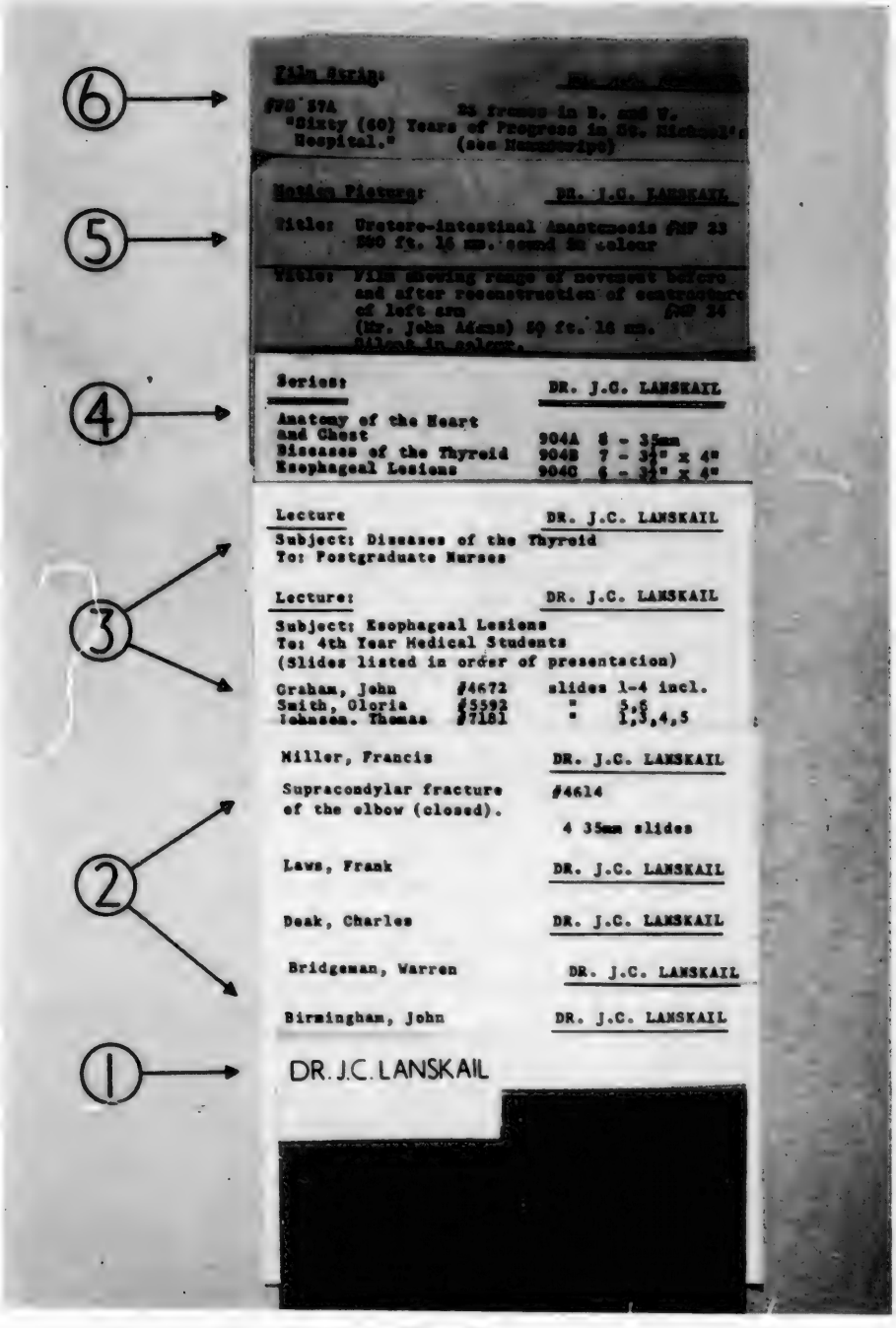

6
Film Strip:
#90-57A 25 frames in B. and W.
"Sixty (60) Years of Progress in St. Michael's Hospital." (see Manuscript)
5
Motion Pictures: DR. J.C. LANSKAIL
Title: Uretero-intestinal Anastomosis #MP 23
240 ft. 16 mm. sound in colour
Title: Film showing range of movement before and after reconstruction of contracture of left arm #MP 24
(Mr. John Adams) 50 ft. 16 mm.
Silent in colour.
4
Series: DR. J.C. LANSKAIL
Anatomy of the Heart and Chest 904A 8 - 35mm
Diseases of the Thyroid 904B 7 - 3¼" x 4"
Esophageal Lesions 904C 6 - 3¼" x 4"
3
Lecture DR. J.C. LANSKAIL
Subject: Diseases of the Thyroid
To: Postgraduate Nurses
Lecture: DR. J.C. LANSKAIL
Subject: Esophageal Lesions
To: 4th Year Medical Students
(Slides listed in order of presentation)
Graham, John #4672 slides 1-4 incl.
Smith, Gloria #5592 " 5,6
Johnson, Thomas #7181 " 1,3,4,5
2
Miller, Francis DR. J.C. LANSKAIL
Supracondylar fracture of the elbow (closed). #4614
4 35mm slides
Laws, Frank DR. J.C. LANSKAIL
Deak, Charles DR. J.C. LANSKAIL
Bridgeman, Warren DR. J.C. LANSKAIL
Birmingham, John DR. J.C. LANSKAIL
1
DR. J.C. LANSKAIL

Figure 9.

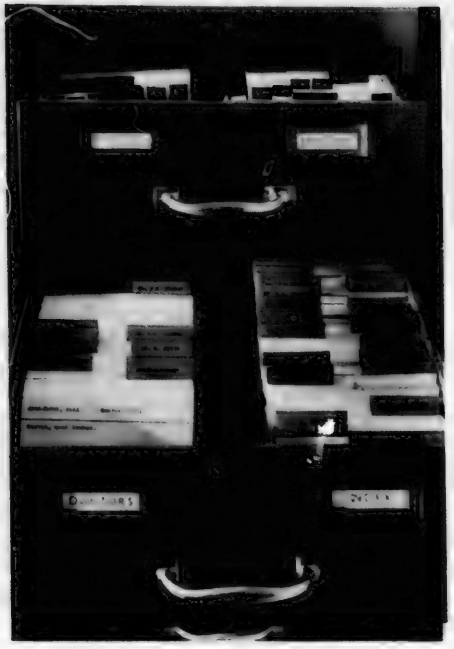


Figure 10.

the diagnosis, slide size, total number of slides in set, and a short description of their nature. (Fig. 9/2). Pathological specimens are not included in this index. Pathological specimens are photographed at the discretion of the pathologist, and are not listed under the attending doctor's name unless he has especially requested it. However, if there are other slides of a patient, the pathology slides are automatically listed with them in the alphabetical patients' file. In preparing a lecture, the doctor, other than the pathologist, is most interested in obtaining a diversified collection of visual material (clinical, operative, etc.) particularly of his own cases. Much time is saved in avoiding the review of all the cases listed under one specific diagnosis in the Standard Nomenclature Index, by going directly to the Doctors' Index. There concise information may be obtained as to what material is available from the practice of any one doctor.

The Doctors' Index provides a cross-index to supplement the Standard Nomenclature filing system.

Appendix to Doctors' Index

Lectures

At the back of each doctor's index are kept lists of slides used for lectures. (Fig. 9/3). These lists include the title of the lecture, to whom the lecture was given, and the photographic material used and its order of presentation. If the lecture is repeated (as to student nurses, medical students, etc.) it is not necessary for the doctor to reselect his material. He has simply to notify the photography department, and, by following the lecture list, the material can be prepared in the same manner it had been previously. (Fig. 11). As additional material accumulates, the doctor may rearrange his visual material by adding new slides or photographs or by exchanging new for old. These lecture lists are a great time-saver both to the photographer and to the lecturer.

Series File

Much photographic material is prepared which cannot be filed in alpha-

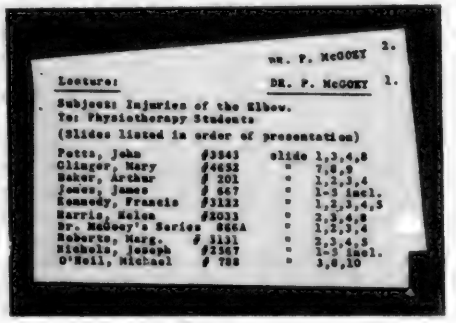

DR. P. McGOEY 2.
Lecture: DR. P. McGOEY 1.
Subject: Injuries of the Elbow.
To: Physiotherapy Students
(Slides listed in order of presentation)
Potts, John #2543 slide 1,3,4,8
Olinger, Mary #4632 " 7,8,9
Baker, Arthur # 201 " 1,2,3,4
Jones, James # 667 " 1-5 incl.
Kennedy, Francis #3122 " 1,2,3,4,5
Harris, Helen #2033 " 2,3,4,8
Dr. McGoey's Series 866A " 1,2,3,4
Roberts, Mary. # 3121 " 2,3,4,5
Nichols, Joseph #2367 " 1-5 incl.
O'Neil, Michael # 788 " 3,8,10

Figure 11.

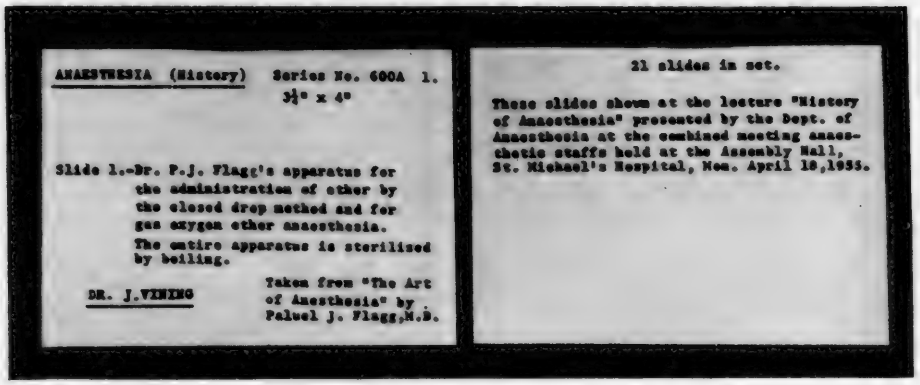

ANAESTHESIA (History) Series No. 600A 1.
3¼" x 4"
Slide 1.-Dr. P.J. Flagg's apparatus for the administration of ether by the closed drop method and for gas oxygen ether anaesthesia.
The entire apparatus is sterilised by boiling.
DR. J.VINING
Taken from "The Art of Anaesthesia" by Paluel J. Flagg,M.D.
21 slides in set.
These slides shown at the lecture "History of Anaesthesia" presented by the Dept. of Anaesthesia at the combined meeting anaesthetic staffs held at the Assembly Hall, St. Michael's Hospital, Mon. April 18,1955.

Figure 12.

betical order under the patient's name. Such items as statistical graphs, anatomical charts, representative collections of E.C.G.'s and x-rays which do not refer to any specific patient cannot be filed by name. For such material there is a special file termed the Series. In the "Series", slides, etc., are filed on yellow cards under the names of the doctor for whom they were prepared and follow the "Lecture" slide series, (Fig. 19) and (Fig. 9/4).

The material, as in the Patients' File, is stored in envelopes. Listed on the envelope is the Series title, its identification number, size of slides, their nature, total number of slides in the set and any other descriptive information available. (Fig. 12).

Because they do not always refer to disease entities or to specific sites it is not possible to code all the Series material according to the S.N.D.O.

As each doctor returns whatever material has been prepared for him, these groups of slides are given a title and listed in a Series Accession Book. An arbitrary number is assigned to each doctor and this number is used in identifying all that doctor's Series material. Since there are, usually, more than one group of Series slides prepared for any one doctor, the alphabet is used to distinguish between the groups — as Dr. John Doe, Series 899A, 899B, etc. (Fig. 13). The identification numbers are printed on the Series slides in red ink to further differentiate from the patients' file. Yellow cards are typed listing title of Series group, their identification number, name of doctor for whom prepared, total number of slides in set and their size. These cards are placed in the S.N.D.O. Index at the beginning of each topographical section to which they refer. (Fig. 14).

Those cards having Series titles which cannot be grouped topographically are merely kept together at the end of the S.N.D.O. Index.

Motion Picture File

Motion pictures are kept in metal or plastic containers. Two different sized cabinets are required, one for films up to 500 ft. in length, the other for films over 500 ft. The identification number is printed in white or black ink on the

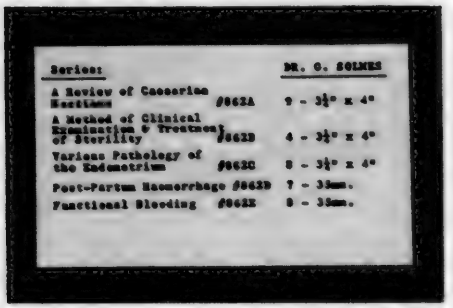

Series:
Dr. G. SOLMES
A Review of Caesarian Sections #062A 9 - 3½" x 4"
A Method of Clinical Examination & Treatment of Sterility #062B 4 - 3½" x 4"
Various Pathology of the Endometrium #062C 8 - 3½" x 4"
Post-Partum Haemorrhage #062D 7 - 35mm.
Functional Bleeding #062E 8 - 35mm.

Figure 13.

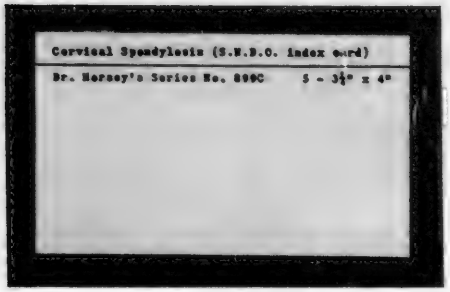


Figure 14.

Figure 15.

lead-in strip of the film. This number is also painted on the edge of the movie container. A label is affixed on the face of the film container on which is listed the title of the film, its identification number, running film speed (16 frames or 24 frames per second), sound or silent, black and white or colour, name of doctor for whom the film was prepared and date the film was made. In instances when the film is of a specific patient, the name is added. (Fig. 15).

Filing and Coding

Motion pictures are listed in a Movie Accession Book and all necessary information is typed on a green card. The identification number is the accession number preceded by the letters M.P. to further distinguish these cards from the Series cards. In cases when there is more than one film container (500 ft. and 2000 ft.) on the same subject, alphabetical letters are added to the identification number.

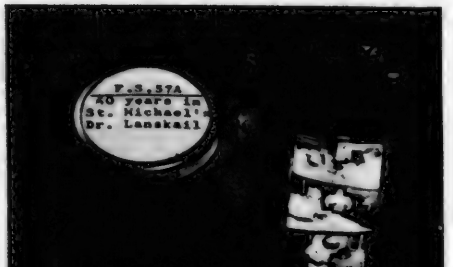


Figure 16.

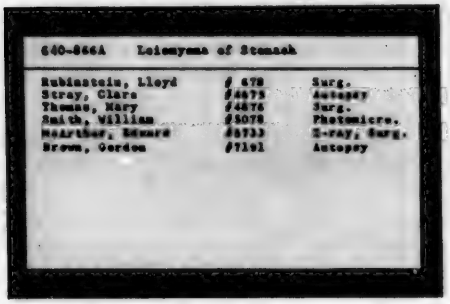

640-866A Leiomyoma of Stomach
Rubinstein, Lloyd #678 Surg.
Stray, Clara #4675 Autopsy
Thomas, Mary #4676 Surg.
Smith, William #5078 Photomicro.
Hearther, Edward #5733 X-ray, Surg.
Brown, Gordon #7191 Autopsy

Figure 17.

Figure 18.

For example:

Mary Johnson — Movie Title — M.P. 23
John Smith — Movie Title — M.P. 35A (500 ft.)
M.P. 35B (2000 ft.)

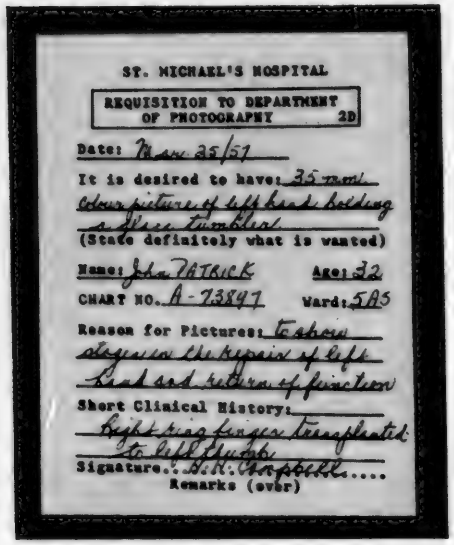
The completed card is placed in the Doctor's Index following the Series cards. (Fig. 9/5). A similar card is also placed in the S.N.D.O. Index at the beginning of the topographical section to which it refers. If the film title or subject can be coded, this too, is done

Film Strips

As with Motion Pictures, film strips are stored in special metal containers, the identification number being printed in white or black ink on the beginning of the film strip. The same number is also printed on the top of the container. Name of the doctor for whom the film strip was prepared and the title are also printed on the top of the container. (Fig. 16).

Most film strips have a dialogue accompaniment — either typewritten or recorded, whichever accompaniment is available. It is noted on the top of the box and Film Strip Index card. The typewritten scripts are filed in regular office file folders in standard filing cabi-

Figure 19.



ST. MICHAEL'S HOSPITAL

REQUISITION TO DEPARTMENT OF PHOTOGRAPHY 2D

Date: Nov 25/57

It is desired to have: 35 mm. Colour picture of left hand holding a three tumbler

(State definitely what is wanted)

Name: John PATRICK Age: 32

CHART NO. A-73847 Ward: 5A5

Reason for Pictures: To show stages in the repair of left hand and return of function

Short Clinical History: Right ring finger transplanted to left thumb.

Signature: A.H. Trapotell

Remarks (over)

Figure 20.

nets. Recordings are filed similarly, but, of course, separate from the typewritten material. Both containers (folders or envelopes) have the identification number, title, doctor's name, which again occurs on the script itself or the record label as the case may be.

Filing and Coding

Similar procedure is employed as for filing and coding of motion pictures. The identification number in this instance being preceded by F.S. and the reference cards used are brown in colour. They follow Motion Picture cards in the Doctors' Index. (Fig. 9/6).

Conclusion

The maintenance of a Central Photographic Library, adequately filed and

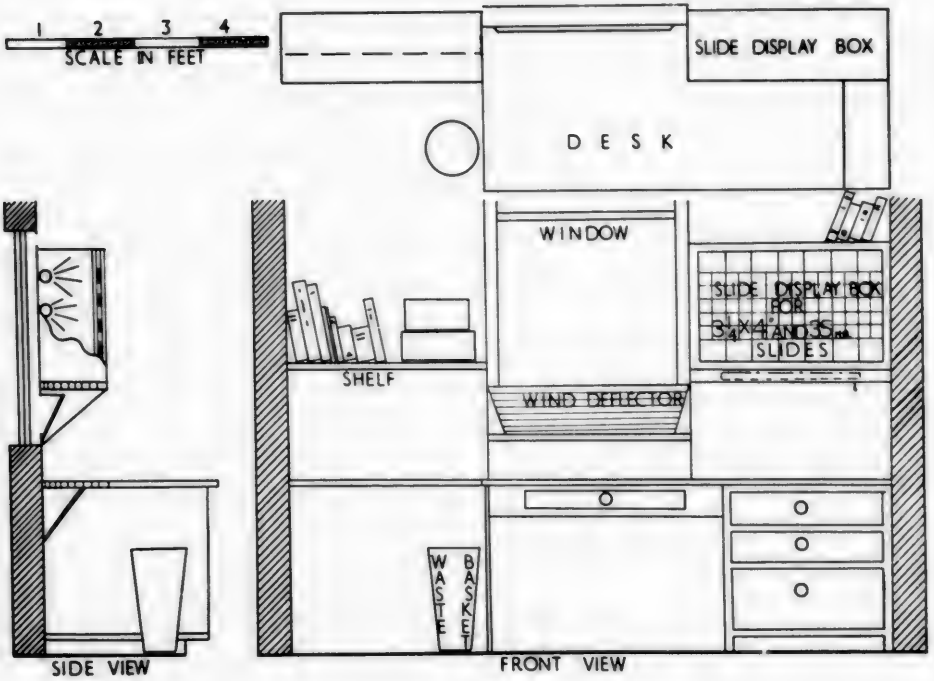


Figure 21.

coded, makes available a large collection of diversified visual material to the entire hospital staff.

While the filing system may appear cumbersome, it can be carried out efficiently and effectively without undue difficulty. Accuracy and conscientious effort are the main requisites. It must be remembered that the Photographic Library is only as good as the filing system. Without this, Medical Photography cannot realize its potential as an aid to the patient, the doctor and the hospital.

Acknowledgement is gratefully made to Sister Mary Paul, R.R. L., and Miss Mary Ann Brown for their assistance in the preparation of this article.

BOOK REVIEWS

UNDERWATER PHOTOGRAPHY SIMPLIFIED, *Jerry Greenberg, Seahawk Products, (Coral Gables, Fla.), 46 pages, 1958, $2.00.*

The title of this short book speaks for itself. In its relatively few pages the aspiring underwater photographer is initiated into the realm of Davey Jones and guided through some of its many mysteries.

The author stresses the use of 35 mm still cameras for underwater photography because of their versatility, interchangeable lenses and large film load. Photographs and descriptions of available underwater housings are included for popular 35 mm, twin-lens 2¼" x 2¼" reflex, and 8 mm movie cameras. Special light sources (flash) and exposure meters are also illustrated. American distributors and manufacturers of underwater photographic accessories are listed.

The special problems of underwater exposure determination, focusing, filters, composition and choice of proper lenses are analyzed for both the neophyte and the experienced *landlubber* photographer. Available light and flash techniques are discussed as well as the use of both monochrome and color films. Common errors are analyzed and ample illustrations of both good and bad technique are presented. Chapters on photographic processing and markets for photographs are included for the beginner. —S. W.

TITLING YOUR COLOR MOVIES, *James W. Moore, Camera Craft Publishing Co., (San Francisco, Cal.), 96 pages, 164 figures, 1958, $1.95.*

The introduction states that it is intended for the "amateur" movie maker. However, the detailed descriptions of equipment, methods and techniques make it worthwhile reading for all classes of photographers. It should be especially useful as a reference in laboratories not specializing in motion picture production, where it is not expedient to purchase commercial titles or professional titling equipment.

The book is a comprehensive treatment of the art of title production at the semi-professional level. The requirements, principles and techniques of good titling are presented for the simplest to the most complex forms of titles. Necessary equipment, for the results desired, is discussed and described. Instructions and plans for building titling equipment are presented in addition to a listing of commercially available units. Details of title design and composition, as well as the many variant tricks and illusions, are described. The quality of titles produced with the aid of this book would probably be limited only by the degree of imagination and skill of the photographer. —S. W.

Association News

● *A section of the Journal devoted to official announcements, chapter events, and other matters of historical significance to the Association.*

GENERAL NEWS

The Second Annual Western Regional Meeting of BPA will be held February 21 and 22, 1959 at the University of California in Berkeley. The theme of the meeting will be "Eyes of Science". John Schutz of San Francisco is General Chairman. Last year the Regional Meeting was held by Northern and Southern California Chapters; this year it will include Pacific Northwest and Intermountain Chapters.

The First Midwestern Sectional Meeting will be held in Iowa City on April 24, 25 and 26, 1959. Four Chapters will take part in this meeting: Chicago, Milwaukee, Prairie and Upper Midwest. Charles Deutsch is General Chairman.

It has been decided not to hold a Northeastern Regional Meeting this year since the Annual Meeting is in that area.

At the last meeting of the Board of Governors in Washington it was suggested that all chapters provide the Chairman of the Chapters Committee with a list of their members. This list should distinguish between National and local members and mailing addresses should be provided for the non-members. The National Association will then contact these local members and encourage them to become National members.

Correction: The award for the Best Journal Paper for 1957 has not yet been presented (as was stated in Bulletin 8). Mr. Harding, Chairman of the Committee, and Mr. Reed and Mr. Vetter are now in the process of making this selection.

CHAPTERS

Boston: The first meeting of the season was held on October 21st. The Chapter invited its members to cocktails and dinner in the Faculty Room of Vanderbilt Hall at Harvard Medical School. After dinner there was a business meeting with election of officers. Laurence B. Brown and Barbara Jacobs were reelected to Chairman and Secretary-Treasurer, respectively. There were brief notes and photos from the Washington Meeting. Eight members from Boston Chapter attended. A dozen prints were submitted to the salon. All were accepted and two entries received awards. In December there was a demonstration of Beseler Slide-O-Film and the Ozalid Process by Arno Lamm of Smith's Photo. Mr. Zieler discussed the selection of proper eyepieces and objectives in photomicrography. Coffee and donut holes were served. (We use the holes 'cause they are less fattening)

Northern California: The first meeting of the season was held on October 20 at the U. of California Medical Center. Sam Ehrlich spoke on "Some Legal Aspects of Medical Photography". Jim Sherman demonstrated the Beseler Slide-O-Film and the Sinar camera. Paul Tracy and Wilmer Renner summarized the Washington Meeting. The November meeting was held at Stamford Medical School. There was a lantern slide symposium with Tom Masterson as guest moderator. In December there was a banquet and installation of officers: Chairman Paul Tracy, Vice-Chairman Sam Ehrlich, Secretary Wilmer Renner, Treasurer Leonard Winograd. Henry Raphael and Don Longanecker are serving on the Executive Committee.

Southern California: The October meeting was a field trip to the Academy Films Studio in L.A. There was a discussion of studio properties, photography, developing and printing of motion picture film, sound recording and editing, and ways in which the general production studio can aid the specialized or limited photographer. Avis Gregersen read and demonstrated a paper by Stanley McComb that had been presented at the Washington Meeting, entitled "A Critical Appraisal of Photomicrographic Illustration". The November meeting was held at UCLA Medical Center. Seth Larson spoke on the preservation and protection of films with lacquer. Don LaGrange demonstrated the Topcon and Rittreck cameras. Each member was asked to bring a print, monochrome or color, with its negative. They were to state what it was, why the picture was taken, and how it was

made (lights, exposure, camera, film, lens, paper). These prints were discussed and criticized with the idea of submitting them to the National Salon. In December, Dr. Robert Tschirgi and Dr. Don Taylor of the Dept. of Physiology at UCLA gave a talk "A New Teaching Technique" using synchro-automatic slide projection with sound and music.

Capital: There was a joint meeting of Capital Chapter and the Maryland Industrial Photographer's Association. Jack Sheldon of Bendix Radio discussed "Printed Circuits and Wire Silk Screen". Sgt. Dixon and Mr. Evans discussed a film they have recently completed entitled "Mouth-to-Mouth Artificial Respiration". This meeting took place in October at the Friendship Airport.

Chicago: In October, at the West Side V.A. Hospital, George Schectman spoke on the "Hasselblad System of Photography" and "Bolex Motion Picture Equipment". Two papers which had been presented at the Annual Meeting by Frank Reindl and Leonard Hart were also given: "A Technique for Clearing and Photographing Esophageal Venous Patterns" and "Portable Soundproof Booth". Chicago will be our host at the 1961 Annual Meeting. Leonard Hart has been elected General Chairman; Louis Pedigo and Charles Lindsay as Vice-Chairmen; and Ralph Creer and Mervin LaRue as advisors. The November meeting was held at Presbyterian Hospital where Jack DeBruin gave a paper "Ultraviolet Light". A second paper and movie on the soundproof booth was given by Frank Reindl. Maria Ikenberg showed a movie entitled "Technique of Tonsillectomy and Adenoidectomy". The December meeting took the form of a Christmas Party.

Central Indiana: A combination luncheon and business meeting was held at Indiana University in November. The following officers were elected: President Robert Albright, Vice-President Paris Johnson, Secretary Richard Scott, Treasurer Joe Demma. In December Joe Pickett presented a resume of a "Teleposium" previously programmed at the V.A. Hospital. Future programs were planned and several members volunteered to give 15 minute talks on any subject of their choice.

Intermountain: The November meeting was a special lecture at the University of Utah on "The Negative and Positive of Color Printing", presented by Lee Mann of Eastman Kodak. In December the group met at Salt Lake County Hospital. The topic was "X-ray in Medicine and Industry". Techniques used in x-ray, cine-x-ray, and daylight duplication were discussed and demonstrated.

New York: The season started with a September meeting at Cornell Medical College. Officers for 1959 were elected: Chairman Donald Wong, Vice-Chairman Philip Oppelman, Secretary-Treasurer Mary Mason. In October there was a workshop in basic microscopy conducted by Julius Weber and a panel discussion on lighting by David Lubin, Bill Smith and Walter Lee. In November Dr. Leo Leveridge of Pfizer Co. spoke on "Obtaining Pictorial Continuity in the Institutionally Produced Film". Philip Oppelman conducted a workshop in microscopy. The December meeting was held at the Manhattan Eye, Ear and Throat Hospital. Louis Mlcoch of Opplem spoke on "The Art of Practical Cleaning and Maintenance of the Microscope". Nels Einwachter of American Speedlight explained the use and limitations of an adaptation of electronic flash to photomicrography. Phil Oppelman continued his workshop in Photomicrography.

Northern Ohio: The September meeting was held at Akron City Hospital. There was a review of the Annual Meeting program and a movie on aortic aneurysms made by Jack Muldowney. Type C color printing and color television were also discussed. In October the group met at the County Morgue (no comments please). There was a tour of the new building and a discussion of the use of 35 mm. negative color stock which they buy in 100 foot rolls. A dinner was given in December in honor of William Stevenson of Mt. Sinai Hospital who is retiring. Mr. Stevenson is a pioneer in the field of color printing and started the Photographic Department at Mt. Sinai.

Prairie: The October meeting was at the V.A. Hospital in Kansas City, Mo. Officers were elected: Chairman Burton Johnson, Vice-Chairman Burton LaVine, Secretary-Treasurer Margaret Ames. Two films were shown: "The Human Cell and the Cytologist" and "Time Out of War". There was also a report on the Annual Meeting by fellow members who attended. The November meeting was at the Topeka, Kansas V.A., Hospital. Members were asked to bring a film they had made for showing, the best to be chosen for use at the Regional Meeting.

Pacific Northwest: In September there was a day's meeting at the Children's Orthopedic Hospital in Seattle. The present officers were elected for another year: Chairman Clifford Freehe, Vice-Chairman Kenneth Buckley, Secretary Ada Cambern, Treasurer Lois Wright. Another day meeting was held in November at the Cancer Institute in Vancouver, B.C. There was a business meeting and a Committee was established for the purpose of procuring new members for the chapter. The scientific program opened with a paper by Dr. Simmons, DMD, who illustrated the value of visual aids in his work. Don Crown and Jack Skinner demonstrated the Poloroid Land Camera as a rapid method of preparing slides. Dr. Frank Noakes gave a paper "Safety in the Operating Room". A film was shown "City of Gold" which was an award winner at the National Film Board Festival.

Rochester: This chapter is being reorganized and will embrace the Buffalo and Syracuse areas as well as Rochester. The name will, therefore, be changed to Western New York Chapter.

St. Lawrence Valley: The October meeting was held at the Montreal Neurological Institute and was devoted to the making of lantern slides. Methods were discussed for preparing rush work. Charlie Hodge demonstrated the Beseler Slide-O-Film and Technifax's Diazo film which yields a negative from a negative and a positive from a positive. He also discussed copying x-rays with a Poloroid Land back on a Speed Graphic. At the November meeting Chris Pope disclosed the secrets of the silk screen printing process. From a few bottles, a tank of hot water, some stencil film and a home-made frame covered with silk, Chris produced beautifully clear, sharp reproductions. In December there was a business meeting with election of officers and a program on time-lapse cinephotomicrography. The results of the election have not yet been received.

Upper Midwest: There was a meeting at the V.A. Center in Des Moines on November 1 and 2, 1958. The following scientific program was held: "Closed Circuit Television: The Photographer's Viewpoint" by James Rothenberger; "A Method for Economical Four Color Reproduction" by Louis Facto; "A Book Holder for Use With a Vertical Copy Camera" by Leonard Julin; motion picture by Jack Davis on "Electrical Stimulation of the Ciliary Ganglion of the Cat's Eye"; "A Portable Soundproof Booth" Frank Reindl and Leonard Hart (tape recorded paper with slides); "Diazo Material for Preparation of Large Size Transparencies" by Charles Deutch; "The Microscopic Technique for Photography of Sensory End Organs" by Stanley McComb. After dinner a motion picture was shown "The Great Adventure" by Arne Suchsdorff.

Wisconsin: There was a meeting in November with election of officers for 1959. The results of the election have not been received. The chapter is holding an animal picture contest with awards for the best photo. Miss Rita Pierick showed color slides taken on a recent European Tour.

Fifteen out of eighteen active chapters have reported during this three month period. This is really good—but like most people—I am never satisfied—I want eighteen out of eighteen. How about it — Mid South, Philadelphia and Texas.

L. B. BROWN, *Chairman Chapters Committee*

188 Longwood Avenue, Boston 15, Massachusetts

New Products

OSCAR FISHER SPRAY PROCESSALL TO BE FEATURED IN GERMAN SHOW

Oscar Fisher "Spray Processall" will be featured at the International Photokina Exposition in Cologne, Germany. This American-designed and constructed photographic film and paper processor, which is made entirely of type 316 stainless steel develops and dries all types of film and paper at a high rate of speed. Designed to meet the requirements of big industrial plants in the United

States, it has now aroused the interest of manufacturers and governments all over the world.

In exhibiting the Oscar Fisher Spray Processall at the 1958 Photokina, arrangements have been concluded with Reeves Equipment Corporation, recently appointed exclusive export agents for Oscar Fisher products, to combine a number of products which the Reeves Corp. handle. This unique combination of photographic products, will make it possible to take actual motion pictures with sound of interested exposition visitors examining the equipment on display, and in a matter of minutes process and show the actual "movie" before the photographed visitors depart.

The Photokina, held every two years in Cologne, Germany, is the only event of its kind, international in scope, it attracts upwards of 150,000 visitors from the four corners of the globe. On display, and demonstrated are the newest photographic products developed. Many foreign governments send their purchasing commissions to the exposition to study and examine the numerous new products. In reality the Photokina is the world's photographic "show case".

THREE NEW SCIENCE FILMS

In step with current plans for strengthening the training of scientists in the United States, the Audio-Visual Center, Indiana University, has released three new science films in biology.

Stressing the significant roles played by microorganisms in the biological world, the films show how man studies, uses and controls bacteria.

BACTERIA: LABORATORY STUDY, shows characteristics of microorganisms and proper methods of studying them.

Contrasting the use of the telescope and microscope in revealing worlds beyond our own, the film opens by showing protozoa, algae, yeasts and bacteria. The electron microscope is used to present photographs of viruses, the smallest known forms of life.

Proper laboratory methods for growing and studying bacteria, including sterilization, preparation of wet mounts and streaking to obtain pure cultures, are explained and demonstrated. Time-lapse cinephotomicrography shows bacterial cells dividing to form new cells and colonies.

In conclusion, the film shows how bacteria are controlled by applying knowledge of their activities.

MICROORGANISMS: BENEFICIAL ACTIVITIES points out many common uses of bacteria

in everyday life and indicates that most microorganisms are beneficial to man.

Beginning with an explanation of how microorganisms produce changes in their environment and cause the formation of new substances, the film first shows the role of bacteria in the nitrogen cycle. Examples of other helpful activities are explained as they relate to the treatment of sewage, production of dairy and other food products, and the commercial production of antibiotics.

Animation reviews the nitrogen cycle. Time-lapse photography shows the production of carbon-dioxide by yeast and the necessity of this activity in bread making.

The film ends by pointing out that the value of microorganisms is not confined to contributions in our daily lives, but the study of these minute forms continues to provide man with clues to the very nature of life itself.

MICROORGANISMS: HARMFUL ACTIVITIES explains how microorganisms cause diseases and how they can be controlled.

After showing some of the common methods developed for protection against disease and undesirable decomposition of foods, early scientists responsible for discoveries in this field are introduced.

Koch's postulates are listed, discussed and applied step by step to determine the bacteria responsible for a disease in tomato plants.

Through cinephotomicrography, the film explains how body defenses within the blood overcome the attack of invading bacteria.

The industrial preparation of vaccines and antitoxins is shown and, with the help of animation, the nature of active and passive immunity is covered thoroughly. Such safeguards as water purification, milk pasteurization, and the use of ultraviolet radiations and chemical antiseptics show other methods of controlling the spread of disease-causing microorganisms.

Ending with examples of destruction of many useful materials, the film refers to man's continual struggle to overcome the harmful and undesirable attacks of some microorganisms.

Purchase and Rental Information

Preview: *Agencies interested in considering any of the films in this series may obtain preview prints from the Audio-Visual Center, Indiana University, Bloomington, Indiana, at no cost other than return postage.*

Purchase: *Prints of these films can be purchased from the Audio-Visual Center, Indiana University, Bloomington, Indiana, and from the Educational Film Library Association, 250 West 57th Street, New York 19, New York.*

Each Film: *15 minutes, sound, color, $150; black and white, $75.*

Rent-To-Own: *These films, like all other Indiana University productions, are available on an annual rental plan which leads to ownership. Inquire for details of this plan by writing to the Audio-Visual Center, Indiana University, Bloomington, Indiana.*

Hal Skinner

STOMACH CAMERA AND STAINLESS STEEL "SKIN"

A Brusch Medical Center nurse hold the three-fourths of an inch gastro-camera which fits inside the stainless steel shell, two and one-fourth inches long. The stomach camera

mechanism, first of its kind to fit inside the stomach, was invented by Norman Gosselin, former Boston University College of Industrial Technology student.

BOLEX BRINGS OUT BASIC 16mm CAMERA

A basic 16mm Bolex movie camera, which will allow the movie maker to enter the field of quality 16mm movies for only $200, has been introduced this month by Paillard Incorporated.

The new camera, to be known as the Bolex H-16M, is a single-lens version of the famous Bolex precision H-16 system. The H-16M has

most of the regular Bolex features, including the new "Preview-Finder," for instant parallax correction and rapid focal length adjustment In fact, the only difference is that a special lens plate is mounted on the front of the camera in place of the familiar three-lens turret. However, the H-16M can be converted to a turret model.

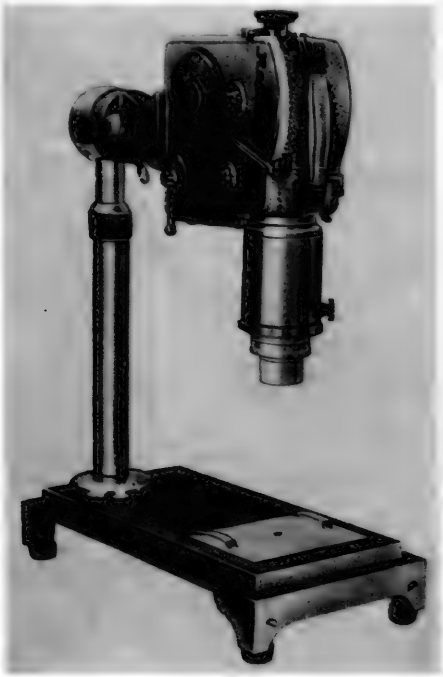
This camera takes a 100 feet of 16mm single- or double-perforated film. It runs at seven governor-controlled speeds, with the convenience of forward and back winding for trick effects. Film loading is through the rapid automatic film threader.

The lens plate is a standard C-mount and accepts all standard, wide angle and telephoto lenses. The camera comes with a Lytar 1" f/1.8 F.M. lens.

CLOSE-UP CINEMATOGRAPHY IS SIMPLIFIED WITH THE CAMEX-REFLEX 8

The parallax free through-the-lens focusing system of the Camex-Reflex, world's only 8mm single-lens reflex camera, is ideally suited to macrocinematography, copywork and titling, and requires only one variable extension tube for ultra close-ups.

The all-metal tube attaches to the Camex with the usual bayonet lock and is used with either the 50 or 75mm Tele-Cinor lenses, increasing their extension range from 10.5 to



52.4mm! Focusing is accomplished with the lens set at infinity, by simply turning the tube which is easily locked into position. The lenses can be focused down to ultra close-ups and will provide subject-to negative ratios of up to 1:1!

The exceptionally large and brilliant Reflex-image of the Camex-Reflex guarantees accurate framing, critical focus and automatic depth-of-field control, at any distance, at any aperture, with no parallax ever!

Distributed in the U.S. exclusively by Karl HEITZ, Inc., 480 Lexington Avenue, New York

17, N.Y., through franchised Camex dealers the variable extension tube with exposure correction chart retails for $29.95.

THE NEW MACBETH QUANTALOG DENSITOMETER

The Macbeth QuantaLog represents the culmination of over twelve years' experience in the manufacture of high quality, high precision photometric instruments.

Desirous of offering an instrument of extreme versatility and yet one which would sell at a modest cost, the designers of the QuantaLog decided to build a series of wanted attachments around a high quality photometer. As a result of this design foresight, the new QuantaLog can be used for a number of photometric applications at a fraction of the cost you would expect for instruments of such high quality.

Here are just a few of its features:

Direct reading 0 to 4.0 density units. (Meter has optical density scale printed in black and the Transmission and Reflectance scale printed in red to avoid confusion.

The QuantaLog has an accuracy of ± .02 density units over the entire scale, when being used with either the Transmission Attachment or Reflection Head Attachment. Because the unit uses a low input (only 25 watts) it has no "heating up" problem.

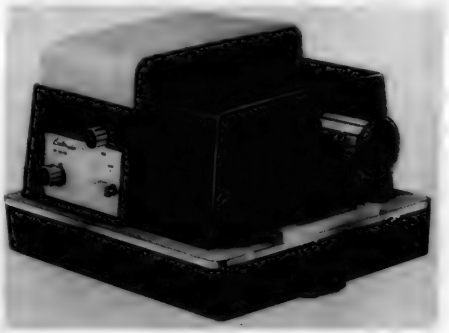
It has a full scale sensitivity of 4.0 density with an excitation of only .01 microlumens at 2850°K.

At present two attachments are in production, a Reflection Head Attachment and a Transmission Attachment, and it is expected that a Digital Readout Attachment will be offered in a very short time. The basic unit and attachments are finished in attractive two-tone gray with a satin chrome and contrasting ebony black nameplate.

The basic QuantaLog Photometer is designed to sell for under $400 and the Reflection Head or Transmission attachment for about $200.

BAUSCH & LOMB MARKETS NEW BALOMATIC "305" SLIDE PROJECTOR

Bausch & Lomb announces the addition of a new 500 watt automatic model to its present line of popular Balomatic slide projectors. Known as the Balomatic "305", the new projector shows up to 40 2" x 2" slides with just a touch of a button to change each one. Projector features high picture fidelity and slides always stay in focus. Controls are conveniently grouped on a single, illuminated panel. Remote control is available as an accessory.



The Balomatic "305" lists at $99.50, complete with 40 capacity non-spill tray and lightweight carrying case. Additional slide trays at $1.25 each. Projector is finished in two-tone gray, chip-proof baked enamel. UL-CSA approved, it carries a lifetime guarantee. Bausch & Lomb Optical Co., 635 St Paul Street, Rochester 2, New York.

PRAKTICA MICROSCOPE ADAPTER

Standard Camera Corporation announces the Praktica Microscope Adapter, a new accessory for the Praktica FX3 and FX2 cameras, as well as any other camera with similar screw mount for the lens. With this accessory, the camera owner is ready for photomicrography

with inexpensive 35mm black-and-white or color film.

The Praktica Microscope Adapter consists of a hinged adapter which is fastened to the draw-tube of the microscope, an extension tube 50mm in length, and an adapter for the camera. The hinged adapter enables the

photographer to swing his camera away from the draw-tube for observation and focusing. Pictures can be made with the ocular removed from the draw-tube or with the ocular in its usual place, if additional magnification is desired.

A complete Instruction Booklet on Microphotography, Macrophotography and Photomicrography is supplied with the Microscope Adapter. List price is $25.00.

BOLEX INTRODUCES SIMPLIFIED 8mm CAMERA

The precision Bolex movie camera mechanism is the heart of a new Bolex 8mm movie camera, designed for the casual home movie maker. Known as the Bolex C-8S "Scene Stealer," the new Bolex brings home movie making new simplicity.

Its Swiss-precision motor is set for a single speed, 18 frames per second, the new no-flicker speed. It comes with a fixed focus lens in a standard D-mount which allows it to be changed for any standard, wide angle or zoom lens.

The C-8S permits single-frame filming, it has a continuous run device for self filming.

The motor is the governor-controlled Bolex motor, which stops instantly without slow-down. The C-8S features a precision footage indicator and audible end-of-film signals.

Jam-proof drop-in loading on the C-8S allows the user to load the camera in seconds. For

safety, a special device prevents closing the camera unless it is properly loaded. Film is held in precise position by the new Bolex pressure pad.

The C-8S with Lytar f/2.5 FF lens is $69.50 (including FET). A list of accessories and other lenses for the "Scene Stealer" is available through Bolex Franchised Dealers.

UNIVERSAL, ADJUSTABLE CLAMP FOR BOOM LIGHTS

Much of the success of these fittings, is due to their AUTOMATIC CONTROL, a feature that enables the lamp on a boom to be moved freely into any desired position without the

attention to joints or fastenings, the lamp "stays put" in any position. This is obtained by "frictional-spring-tension", variable in strength as may be desired. UNIVERSAL ADJUSTABILITY, with automatic control, is a feature of all PLR joints which are made in many types and sizes.

The Model ½—¾ is designed to slip a boom up to ½" in diameter, and clamp onto a lightstand up to ¾" in diameter. Obvious use is the conversion of light stands to boom lights.

Model ½-¾	$4.95
Model ½-1¼	5.75
Model ¾-¾	6.50
Model ¾-1 5/16	8.50

EXTENSION BELLOWS FOR THE PRAKTINA FX CAMERA

A precision-made Extension Bellows for the Praktina FX camera, for use with the normal, wide-angle or moderate telephoto lenses supplied for the Praktina FX camera, is now available from Standard Camera Corporation, states Mark S. Lulinsky, president. It is expected to find wide use as an aid in macrophotography and microphotography by nature, science, stamp and coin photographers and others engaged in close-up photography.

When fully closed, the Praktina FX Extension Bellows is one of the shortest in existence, permitting its use in that position for very

small magnification ratios. The maximum extension of the Bellows is 2.5 inches (56mm). Its extension, when closed, is only 0.3 inches (8mm). When used with lenses of normal focal length, such as the 50mm f/2.8 C. Z. Jena Tessar, or 58mm f/2.0 C. Z. Jena Biotar,

the magnification ratios available range from 1/10th life size up to larger than life.

Since the photographer can set the Bellows in any position between fully extended and fully closed, he has absolute control of framing and magnification at all times. A special advantage of this deluxe accessory is its mechanical operation, in which only the lens-to-film distance changes during focusing, while the lens-to-object distance remains constant. Maximum ease of operation results.

The Praktina FX Extension Bellows can be used with short-barrel telephoto lenses to provide a focusing range from 2" to infinity. When magnification ratios larger than 1:1 are required, it can be used in conjunction with the Praktina FX Extension Tube Set or the Special Extension Tube Set for Lens in Reverse Position.

The unit features twin-track construction for extra rigidity, an aluminum alloy body for lightness in weight. The Bellows material is a special coated fabric designed for long wear and light-tightness. It is flexible, crease-proof, mildew-proof, roughened inside to minimize reflection. With instruction manual, $69.50 list.

EDNALITE INTRODUCES 8mm PRO-ZOOM MOVIE OUTFIT

The EdnaLite Optical Company, Inc. of Peekskill, New York announces the availability of a precision EdnaLite 8mm PRO-ZOOM Movie Outfit to attain professional quality 8mm movies incorporating dramatic and film saving ZOOM effects.

This outfit consists of the EdnaLite f/1.9, 8mm PRO-ZOOM Lens, a versatile 4 speed, Keystone 8mm movie camera and a genuine leather movie case.

The EdnaLite 8mm PRO-ZOOM lens combines all the functions of individual normal, wide angle and telephoto lenses into one ultra-precision ZOOM lens. With an uninterrupted upward and downward motion of the zoom lever, the user can film razor sharp professional movies of the highest calibre from wide angle through telephoto and vice versa . . . without a single break in film continuity. What the user sees through the gear coupled Zoom Viewfinder is exactly what he gets. Its lens speed of f/1.9, the fastest ever achieved in an 8mm zoom, makes filming with available light a reality. What's more, the EdnaLite 8mm PRO-ZOOM has a focusing range from infinity to 3 feet.

Selected as a result of careful tests conducted to determine a suitable companion to this precision lens system is a versatile 4 speed camera of die cast all aluminum construction. Drop in loading and hinged cover that locks film without sprockets makes filming with this movie outfit a breeze.

And . . . for your convenience, a smart grey genuine leather movie case that holds camera with lens for instant shooting is supplied.

This revolutionary EdnaLite 8mm PRO-ZOOM Movie Outfit represents the ultimate in movie making. Its uses in the fields of Business, Industry, Science, Medicine, Sports and Hobbies are unlimited.

Complete price of Movie Outfit is $299.50.

NEW LINHOF BOOK HAS WEALTH OF TECHNICAL PHOTO INFORMATION

Thousands of Linhof camera owners, and many others using "large format" cameras will cheer the publication of LINHOF PRACTICE, a comprehensive volume on applied photography, imported from West Germany by Kling Photo Corporation, New York, sole distributors of Linhof Precision cameras.

Published by GROSSBILD TECHNIK magazine, the library size 9¼ x 11½" book has 218 pages of highly informative material for the professional photographer, covering every field from portraiture to photomicrography.

While special emphasis is given to the versatility of Linhof cameras, the text, nearly 400 illustrations — including many full-page four color reproductions — and explanatory diagrams and tables make this easily the most elaborate work of its type ever published.

Considerable space is devoted to the utilization of camera movements for control of perspective, increased depth of field at relatively large apertures, etc.

Available through better camera stores, LINHOF PRACTICE is $7.95.

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Superior craftsmanship in still or motion picture photography of biological subjects.

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(These require submission of evidence.)

Meritorious contributions to biological photography overall through sustained organizational work.

Two sponsors are required. The sponsors should be well acquainted with the candidate's work and ready to furnish the Board with details of his experience and achievements. Those who wish to sponsor a member whom they believe to be eligible should request a Fellowship Application form from the Secretary of the Fellowship Committee: Mrs. Maria Ikenberg, University of Illinois, 904 W. Adams Street, Chicago 7, Illinois.

CONTENTS

JOURNAL OF THE BIOLOGICAL PHOTOGRAPHIC ASSOCIATION

Volume 26, Number 4 — November, 1958

A CRITICAL APPRAISAL OF PHOTOMICROGRAPHIC ILLUSTRATION . . . . Stanley J. McComb, F.B.P.A. 145

ABSTRACTS 155

CONTENTS MEDICAL AND BIOLOGICAL ILLUSTRATION 156

NEGATIVE IDENTIFICATION . . . Herbert Fischler, B.S., M.A. 157

DARK FIELD ILLUMINATOR FOR PETRI DISH PHOTOGRAPHY . . . . . John N. Schutz 159

SYSTEM OF FILING FOR MEDICAL PHOTOGRAPHY . . . . . Arthur Smialowski 165

BOOK REVIEWS 177

ASSOCIATION NEWS 178

NEW PRODUCTS 181

CONTRIBUTING MEMBERS 188

SUSTAINING MEMBERS, FELLOWS OF THE ASSOCIATION, FELLOWSHIP PROCEDURE . . Inside Back Cover

PRINTING BY HAMMERSMITH-KORTMEYER COMPANY, MILWAUKEE, WISCONSIN